3.11 ENVIRONMENTAL DESIGN OF ELECTRICAL EQUIPMENT

→(DRN 01-388)

Environmental condition information and design bases of safety related electrical equipment and components which are required to function during and subsequent to design basis events is maintained in the Waterford 3 Environmental Qualification (EQ) Program. The foundation of the EQ Program is contained in a separate comprehensive submittal to the NRC entitled, "Waterford SES Unit No. 3 Response to NUREG-0588" (Reference 1).

The information contained therein meets or exceeds 10CFR50.49 and NUREG-0588 requirements and is maintained in accordance with plant procedures and design guides to reflect the current plant configuration.

Equipment that is used to perform a necessary safety function has been demonstrated capable of remaining functional under all service conditions postulated to occur during its installed life for the time it is required to operate. This requirement is identified in General Design Criteria (GDC) 1 & 4 and 10 CFR 50 Appendix B Sections III, XI & XVII. This requirement is applicable to equipment located inside as well as outside containment. Additional detailed requirements and guidance relating to the methods and procedures for demonstrating this capability are contained in 10 CFR 50.49 and NUREG-0588.

NUREG-0588 entitled, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment" was issued in December 1979 to implement an orderly and systematic approach for equipment qualification programs by industry and to provide guidance to the NRC staff for its use in ongoing licensing reviews.

IE Bulletin 79-01B, "Environmental Qualification of Class 1E Equipment," issued January 14, 1980, and its supplements dated February 29, September 30, and October 24, 1980 established environmental qualification requirements for operating reactors. This bulletin and its supplements were provided to OL applicants for consideration in their review.

The NRC requested by letter dated November 12, 1980 that LP&L review the environmental qualification documentation for each item of safety-related electrical equipment that could be exposed to a harsh environment to determine the degree of compliance to NUREG-0588 including deviations. The Waterford electrical equipment was to be qualified in accordance with the acceptance criteria specified in Category II of NUREG-0588. Waterford indicated its intentions by letter dated April 14, 1981 to provide its NUREG-0588 submittal to the NRC on or before October 1, 1981.

A final rule for environmental qualification of electric equipment important to safety for nuclear power plants became effective on February 22, 1983. This rule identified as 10CFR50.49 specifies the requirements to be met to demonstrate the environmental qualification of electrical equipment important to safety located in a harsh environment.

Waterford provided equipment qualification information by letters dated November 15, 1982; November 30, 1982; January 27, 1983; February 2, 1983; February 11, 1983; February 24, 1983; and March 2, 1983 to document the degree of compliance with NRC requirements and supplement the information contained in this FSAR section.

The staff evaluation of Waterford’s environmental qualification program included an onsite examination of equipment, audits of qualification documentation, and a review of Waterford’s submittals for completeness and acceptability of systems and components, qualification methods, and accident environments. The NRC audit of Waterford's qualification documentation and installed electrical equipment was conducted January 4 through 6, 1983. The criteria described in SRP Section 3.11, Revision 2 (NUREG-0800) and NUREG-0588 Category II was the basis for the staff evaluation of the Waterford environmental qualification program to determine compliance adequacy. Revision 1 of NUREG-0588 was utilized to clarify staff positions as required.

Waterford submitted the complete list of TMI Action Plan Regulatory Guide 1.97 Category 1 & 2 equipment that require qualification and status by letter dated August 3, 1983. All the Regulatory Guide 1.97 equipment located in a harsh environment was included in the qualification program. Justification for interim operation (JIO) was provided for any equipment that was not qualified at the time of submittal. The NRC indicated that Waterford's response was acceptable. Waterford indicated by letter dated March 13, 1984 that all Category 1 and 2 (RG 1.97) electrical equipment located in a harsh environment was qualified except for two Regulatory Guide 1.97 items for which JIOs were provided.

Waterford responded on November 7, 1983 to a request concerning submittal of a list for all non-safety-related electrical equipment located in a harsh environment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety related equipment. Waterford indicated that there were no non-safety-related electrical equipment that met this criteria Waterford referenced FSAR Section 8.3.1.2, which describes compliance with the separation criteria of Regulatory Guide (RG) 1.75. The staff had previously reviewed this FSAR section and found it acceptable.

Waterford provided commitments for corrective action and schedules for completion for items not having complete qualification documentation on or after February 22, 1983 but prior to November 30,1985 per 10CFR50.49(I). These evaluations were required to be submitted to the staff before an operating license could be granted. Waterford submitted an updated list of equipment by letter dated February 10, 1984, indicating environmental qualification status including two Regulatory Guide 1.97 and two original scope items that were considered as not qualified at the time of the letter submittal.

Waterford submitted justification for interim operation (JIO) by letters dated March 13 and April 9, 1984 for one RG1.97 and one original scope item. . The submitted JIOs were based on partial test data and were found acceptable to the staff. Waterford committed to replacing equipment if required and to require field verification for other equipment to ensure qualification. The staff concluded that no additional JIO was required for the remaining RG 1.97 item (Heated Junction Thermocouples). The finial original scope item (Rosemount 1153A transmitters) was considered resolved by Waterford letters dated August 5, 1983, and March 1, 1984. Waterford confirmed that all qualification requirements were completed by letters dated October 18 and November 12, 1984. The NRC concluded that Waterford had demonstrated compliance with the requirements of 10 CFR 50.49, the relevant parts of General Design Criteria (GDC) 1 & 4, 10 CFR 50 Appendix B Sections III, XI, & XVII and the criteria specified in NUREG-0588.

3.11.1 EQUIPMENT IDENTIFICATION AND ENVIRONMENTAL CONDITIONS

The environmental conditions (including normal and accident) for temperature, pressure, radiation, and operability under accident conditions were initially sumarized in Section B of Reference 1 which are updated in Table 3.11-1. The specified and qualified environmental conditions for each component are provided in manufacturer specific Environmental Qualification Assessments maintained by Waterford 3 personnel.

→(EC-658, R302)
Table 3.11-1 provides a summary of environmental conditions for all plant rooms and areas which include detailed temperature and radiation parameters. The current peak temperature and pressure for a LOCA and in the event of a MSLB are provided in FSAR Table 6.2-1. The peak outside containment temperature as the result of DBA is 150°F with no increase in atmosphere pressure. For EQ qualification evaluation the peak temperature inside containment is 269°F for a LOCA and 414°F in the event of a MSLB. The post power up-rate temperature values are bounded by the EQ evaluation values. Areas inside containment are the only zones which experience an increase in atmospheric pressure as the result of a DBA whereas the Annulus is the only zone that will experiences a decrease in atmospheric pressure under the same conditions. The plant floor plan drawings located in FSAR Section 1.2 provide the physical location of significant plant components. A visual depiction of the Reactor Building and Reactor Auxiliary Building parameters are found in the Waterford 3 Environmental Zone Maps (G-M-0001 through G-M-0017), and results of temperature monitoring programs.
←(EC-658, R302)

The accident temperature environments of the plant rooms and areas are based on the postulated worst-case accident conditions. The postulated worst case conditions are considered to be the LOCA/MSLB with a loss of offsite coincident with the loss of one train of Class 1E heating, ventilation, and air conditioning (HVAC) systems. It is anticipated that it requires approximately four hours to restore offsite power. Critical plant areas are provided with Class 1E Fan Coolers utilizing the chilled water system for normal and post accident conditions.

3.11.1.1 Equipment Classification

Safety-related components required to mitigate the consequences of a design basis accident, to provide post-accident monitoring or to attain a safe shutdown are categorized by their location and functional requirements. The functional requirements are determined by assessing the component's contribution to the mitigation of a loss-of-coolant accident (LOCA) or main steam line break (MSLB) or for safe shutdown. Table 3.11-2 contains electrical equipment that requires qualification of 10CFR50.49 as well as electrical and mechanical safety related equipment that do not require environmental qualification.

The only electrical equipment that is omitted from consistent entries in this table is cable with the exception of pre-fabricated cable used for Core Exit Thermocouples (CETs) and Heated Junction Thermocouples (HJTCs). All cable, with the exception of lighting cable, installed at Waterford was purchased as Class1E and qualified for use inside containment, therefore it is qualified for all plant areas. The installation of field cable for all electrical systems is assumed and may be omitted if it is known there are no environmental restrictions on its use.

The operability requirements specified in this table (i.e., Continuous, NPASF = no post accident safety function, or number of days, hours or minutes) are obtained from the results of the qualification program. Specific time duration entries are obtained from environmental qualification requirements, which are typically 120 days unless a shorter duration is justified. Those components identified with a “Continuous” entry are typically safety related electrical and mechanical equipment that are located in a mild environment or mechanical equipment located in a harsh environment. Those components identified with “NPASF” are those components located in a harsh environment that have no post accident mitigating function. The location column of Table 3.11-2 identifies the type of environment the equipment is installed in instead of the specific plant location for most situations. HC indicates that the equipment is installed in a Harsh environment inside Containment whereas M indicates a Mild environment location. Similarly, HT designates a harsh environment for Temperature only, HR is a Radiation only Harsh environment and HB is a Harsh environment for Both temperature and radiation for locations outside containment.

3.11.2 QUALIFICATION TESTS AND ANALYSES

Environmental qualification documentation for equipment required to mitigate or monitor an accident and/or to place the plant in a cold shutdown condition is maintained to reflect the current plant configuration by Waterford 3 personnel. This documentation demonstrates environmental qualification employing the requirements and margins specified in NUREG-0588 (Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment). The initial program and documentation status was submitted to the NRC in Reference 1. This information has been revised since the initial submittal to incorporate information changes pertaining to new and deleted equipment, revised environmental parameters and lesson learned. The qualification information is maintained in evaluation documents identified as Environmental Qualification Assessments (EQAs).

←(DRN 01-388)

The following table lists additional environmental design criteria with a corresponding FSAR reference subsection where Waterford 3 compliance is discussed:

Criteria	FSAR Reference Subsection
10CFR50, Appendix A GDC 1	3.1.1 and Ref. 1
GDC 4	3.1.4 and Ref. 1
GDC 23	3.1.19 and Ref. 1
GDC 50	3.1.43
10CFR50, Appendix B, Criterion III	17.1.2.3
Regulatory Guide 1.30	17.1.2.2
Regulatory Guide 1.40	8.3.1.2
Regulatory Guide 1.63	8.3.1.2
Regulatory Guide 1.73	8.3.1.2
Regulatory Guide 1.89	8.3.1.2 and Ref. 1

3.11.3 QUALIFICATION TESTS AND ANALYSES RESULTS

→(DRN 01-388)

Environmental Parameter Evaluation Forms (Skew Sheets) are included in the Environmental Qualification Assessments per engineering design guide for all accident mitigating (AM), post-accident monitoring (PAM), and safe shutdown equipment. These forms include the specified and qualified environmental parameters (temperature, pressure, radiation, humidity, chemical spray, cycling, aging and submergence) and an indication as to whether qualification was by test and/or operating experience. Environmental Qualification Maintenance Inputs tabulate all equipment requiring necessary action (i.e., replacement or refurbishment), and maintenance activities required to maintain qualification per engineering design guide.

Waterford maintains the qualification files as Category 1 although the plant was licensed as a Category 2. Waterford uses the thermal aging performed in the conduct of the equipment age degradation testing to calculate a qualified life based on a conservative determination of service temperature to maintain Category 1 requirements where it is feasible to do so. Waterford has used analysis based on type testing to determine qualified life for a few limited components where temperature cycling was employed to place the tested equipment in an end of condition instead of full thermal aging.

Safety related components requiring environmental qualification are also age preconditioned by subjecting the tested prototype samples to radiation to include normal and post accident total integrated dose. The integrated dose applied to the test samples is equivalent to one year of post accident exposure that exceeds the commitment to demonstrate operability for 120 days post accident plus margin. Age preconditioning also includes electrical and mechanical cycling as appropriate that are based on conservative cycle estimates anticipated over the installed life of the equipment including post accident operation with margin.

Design basis accident (DBA) testing for equipment located inside containment is performed using a composite temperature and pressure profile of the MSLB and LOCA. The MSLB has the dominant parameters for the first 15 minutes of the profile upon which the LOCA then produces the dominant parameters. The use of the composite profiles removes the necessity for having to determine and justify which components inside containment are required to mitigate a LOCA, MSLB or both. It is assumed that all 10CFR50.49 components are required for both postulated accidents unless there is a special case

→(EC-658, R302)
evaluation. Testing is performed at sustained higher temperatures and pressures than are anticipated to be encountered during an accident, consequently the test duration does not extend to the 120 day operability commitment plus margin. The accident degradation equivalency technique is employed to demonstrate that the shorter duration test at higher temperatures is more severe that the 120 day postulated plant accident profile with significant margin. Many of the DBA tests were conducted using the IEEE-323-1974 accident profile which resulted in nominal peak test temperatures of 340°F - 350°F. This enveloped the peak EQ evaluation LOCA temperature of 269°F but was less than the peak EQ evaluation MSLB temperature of 414°F. Thermal lag analysis was used to address the MSLB segment of the profile. NUREG-0588 permits analysis to supplement LOCA test data to demonstrate qualification for MSLBs. The NRC reviewed examples of this analysis and found the approach utilized acceptable.

The worst case DBA temperature profile for components located outside containment is approximately 150°F for a four hour duration with no increase in atmospheric pressure. Many of the components qualified for use inside containment are also installed outside containment reducing the need for extreme environmental testing at lower temperatures. Those components which have no counterparts qualified for inside containment are qualified for their installed locations outside containment. The criteria used to define the size and location of high energy line breaks are described in FSAR Section 3.6. There are HELB zones located outside containment, however, there is no EQ related equipment located in the harsh environment of a high energy line break outside the containment as described in FSAR Subsection 3.6A.2.
←(EC-658, R302)
→(DRN 03-2056, R14; 05-163, R14)
The maximum submergence level inside containment has been established at an elevation of +6.79 inches above mean sea level (MSL) per calculation EC-M89-004. MSL is 11 feet above the containment basemat, therefore the maximum submergence level is 138.79 inches above the basemat. All safety related equipment including splices near or below the submergence level has been evaluated for height above submergence level, submergence qualification or completion of safety function by the time submergence occurs. Safety equipment and their splices located below the maximum flood level whose safety function was required post flood were raised to prevent post accident submergence. Submergence qualification of safety related cables was resolved per NRC Inspection Report 50-382/89-05.
←(DRN 01-388, R11-A; 03-2056, R14; 05-163, R14)

3.11.4 LOSS OF VENTILATION

All rooms, where ESF and RPS components and their support systems are located, require temperature control during accidents to assure the system function. Fully redundant ventilation and cooling systems are utilized to satisfy these needs.

The maximum temperatures considered in the sizing of ventilation and cooling systems serving safety-related systems are determined by additive analysis of the following factors:

a) maximum outdoor design temperatures for the geographical area of the plant (both wet bulb and dry bulb readings) per ASHRAE standards (one percent),

b) maximum internal piping thermal loads, if applicable, for the room, using maximum operating temperatures for the pipe contents and maximum footage of active pipe for each mode of operation (this value may be negative),

c) maximum internal electrical load, assuming full lighting for the room, and using, if applicable, the maximum control and equipment resistance losses for each mode of operation,

d) maximum heat transfer from miscellaneous equipment surfaces, if applicable (e.g., outer surface of the diesel generator),

e) maximum heat transfer from the surfaces of open pools and tanks, if applicable, using the maximum operating temperature of the contents, and

f) maximum heat transfer from the surfaces of the room including walls, floor, and ceiling, or roof (this value may be negative).

Seismic Category 1 and Safety Class 3 air conditioning systems, described in Section 9.4, are powered from the Class 1E electrical power supplies and are provided for the locations listed in Table 9.2-16. They are designed so that the single failure of an active component, after a design basis accident, cannot impair the ability of the systems served by the air conditioning equipment to fulfill their safety functions.

Two redundant Safety Class 3 seismic Category 1 air conditioning trains are provided in the Reactor Auxiliary Building for the main control room envelope. It is not considered credible that simultaneous loss of the two trains could occur.

3.11.5 ESTIMATED CHEMICAL AND RADIATION ENVIRONMENT

3.11.5.1 Chemical Environment

→(DRN 01-388)

Components located inside containment required to mitigate or monitor an accident and/or place the plant in a safe shutdown condition have been tested in a simulated accident spray environment. The postulated chemical spray environment inside containment as the result of a LOCA or MSLB is 1720-3000 ppm boron as boric acid with a pH = 7.0 to 8.1 controlled with sodium triphosphate as documented in calculations EC-S906-012 and EC-S96-013. Equipment located inside containment has been prototype tested or analyzed based on test evidence for this chemical environment. This testing is to ensure that the required equipment is capable of performing the intended safety related function while in long term contact with boric acid solution recirculated through the safety injection system (SIS) and the containment Spray System (CSS). The chemical spray environmental evaluation is contained within the Environmental Qualification Assessments for the affected components.

3.11.5.2 Radiation Environment

The radiation environment for qualification of equipment is based on the normally expected radiation environment over the qualified life of the equipment (assumed 40 years for this purpose), plus the radiation associated with the most severe DBE (i.e., LOCA) during or following which the equipment must remain functional. It is assumed that the DBE radiation condition occurs at the end of the assumed 40 year life. Radiation dose rates are integrated for one year post-LOCA for equipment whose operability is required in the long term (i.e., greater than one hour). Radiation qualification documentation is contained in the Environmental Qualification Assessments.

←(DRN 01-388)

SECTION 3.11: REFERENCE

1). Louisiana Power & Light Company, Waterford SES Unit #3, Response to NUREG-0588, Rev 0 (December 1981), Rev 1 (May 1982), Rev 2 (November 1982), Rev 3 (January 1984), Rev 4 (February 1984), Rev 5 (November 1984).

TABLE 3.11-1 (Sheet 1 of 9) Revision 14 (12/05)

ENVIRONMENTAL CONDITION SUMMARY

Security Related Information
Table Withheld Under 10 CFR 2.390

TABLE 3.11-1 (Sheet 2 of 9) Revision 14-A (03/06)

ENVIRONMENTAL CONDITION SUMMARY

Security Related Information
Table Withheld Under 10 CFR 2.390

TABLE 3.11-1 (Sheet 3 of 9) Revision 302 (12/08)

ENVIRONMENTAL CONDITION SUMMARY

ROOM	ROOM DESCRIPTION	BLDG & LEVEL	TEMP NORM	TEMP ACCDNT [a]	RADS (TID) NORMAL [b]	RADS (TID) ACCDNT [c]	ENV CLASS

→(DRN 05-127, R14)

Security Related Information
Table Withheld Under 10 CFR 2.390

←(EC-10297, R302)

ENVIRONMENTAL CONDITION SUMMARY

ROOM	ROOM DESCRIPTION	BLDG & LEVEL	TEMP NORM	TEMP ACCDNT [a]	RADS (TID) NORMAL [b]	RADS (TID) ACCDNT [c]	ENV CLASS

Security Related Information
Table Withheld Under 10 CFR 2.390

ENVIRONMENTAL CONDITION SUMMARY

Security Related Information
Table Withheld Under 10 CFR 2.390

ENVIRONMENTAL CONDITION SUMMARY

ROOM	ROOM DESCRIPTION	BLDG & LEVEL	TEMP NORM	TEMP ACCDNT [a]	RADS (TID) NORMAL [b]	RADS (TID) ACCDNT [c]	ENV CLASS

Security Related Information
Table Withheld Under 10 CFR 2.390

ENVIRONMENTAL CONDITION SUMMARY

Security Related Information
Table Withheld Under 10 CFR 2.390

ENVIRONMENTAL CONDITION SUMMARY

ROOM	ROOM DESCRIPTION	BLDG & LEVEL	TEMP NORM	TEMP ACCDNT [a]	RADS (TID) NORMAL [b]	RADS (TID) ACCDNT [c]	ENV CLASS
Security Related Information Table Withheld Under 10 CFR 2.390							

ENVIRONMENTAL CLASS per 10CFR50.49 is defined as: HC = harsh environment inside containment, HT = harsh environment because of temperature, HR = harsh environment because of radiation, HB = harsh environment because of both radiation and temperature, M = mild environment.

(a) Worst case temperature is indicated for LOCA/MSLB coincident with loss of offsite power for approximately four hours

(b) 40 year integrated dose

(c) 40 year integrated dose plus one year post LOCA dose

(d) Although peak MSLB temperature is greater than LOCA, the LOCA temperature bounds the MSLB profile for purposes of equipment qualification. See Reference 1, Section B.1.2.

(e) The post accident chemical environment inside the RCB (Containment) is pH = 7.0 – 8.1 with 1720 – 3000 ppm boron as boric acid. There are no additional chemical environments outside containment.

(f) Normal humidity levels for all plant areas is 20% - 90% during normal and accident conditions except for outdoor areas which is 0% - 100% for normal and accident conditions. The maximum RCB (Containment) humidity level during accident conditions is 100%.

(g) Exclusive of Spent Fuel Storage Pool. Based on dose rate adjacent to Refueling Canal Drain Pump at EL. –35 MSL

(h) See Section 2.3 for detailed discussion of regional meteorology

(i) The peak accident pressure inside the RCB (Containment) is 44.0 psig. There are no additional harsh environment areas which experience an increase in atmospheric pressure as the result of a design basis accident. See Section 6.2 for more information.

(j) The peak negative pressure as the result of a design basis accident occurs in the Annulus (Room 420) which is –8.00 inches H_2O or –0.325 lb/in^2. There are no additional areas which contain accident mitigating equipment that are subject to negative accident pressure.

←(DRN 01-388, R11-A)

ENVIRONMENTAL CONDITION SUMMARY

→(DRN 05-1549, R14)
(l) The CVAS contact accident doses exceed the general area values. This value is valid for <4' from the filter train.
(m) The accident dose to air handling unit A exceeds the general area doses due to streaming from the SBVS B filter train through the airlock (Room 315). Doses up to building line 10A could potentially exceed 1.0E4 Rads.
←(DRN 05-1549, R14)

TABLE 3.11-2 (Sheet 1 of 30) Revision 11-A (02/02)

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

→(DRN 01-388)

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
SAFETY	XSUMP	SUMP	Continuous	Continuous	HC
INJECTION	VALVOP	AIR ACTUATORS	Continuous	Continuous	HB,HC,HR
SYSTEM		ELECTRO-HYDRAULIC ACTUATORS	120 Days by Test	120 Days by Test	HC
		MANUAL VALVE OPERATORS	Continuous	Continuous	HB,HR
SI		MOTOR ACTUATORS	120 Days by Test	120 Days by Test	HB,HC,HR
			NPASF	NPASF	HB
	VALVE	AIR OPERATED VALVES	Continuous	Continuous	HB,HC,HR
		CHECK VALVES	Continuous	Continuous	HB,HC,HR
		ELECTRO-HYDRAULIC OPERATED VALVES	Continuous	Continuous	HC
		MANUAL OPERATED VALVES	Continuous	Continuous	HB,HC,HR,M
		MOTOR OPERATED VALVES	Continuous	Continuous	HB,HC,HR
		RELIEF VALVES	Continuous	Continuous	HB,HC,HR
		SOLENOID OPERATED VALVES	120 Days by Test	120 Days by Test	HB,HC,HR
		VACUUM BREAKERS	Continuous	Continuous	M
	PUMP	SAFEGUARD PUMPS	Continuous	Continuous	HR
	MOTOR	SAGEGUARD PUMP MOTORS	120 Days by Test	120 Days by Test	HR
	IXMITR	FLOW TRANSMITTERS	Continuous	Continuous	M
		LEVEL TRANSMITTERS	120 Days by Test	120 Days by Test	HC
		MECHANICAL FLOW SENSING ELEMENTS	Continuous	Continuous	HB,HR
		POSITION TRANSMITTERS	NPASF	NPASF	HB,HR
		PRESSURE TRANSMITTERS	120 Days by Test	120 Days by Test	HC
			Continuous	Continuous	M
			NPASF	NPASF	HC
		TEMPERATURE SENSORS	120 Days by Test	120 Days by Test	HB
			36 Hours by Test	36 Hours by Test	HR
	INDREC	AMMETERS	Continuous	Continuous	M
		FLOW INDICATORS	Continuous	Continuous	M
		LEVEL INDICATORS	Continuous	Continuous	M
		METERS	Continuous	Continuous	M
		POSITION INDICATORS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		RECORDERS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
	ICNTRL	MECHANICAL FLOW ORIFICE	Continuous	Continuous	HB,HR
		SOLENOID CONTROL VALVES	120 Days by Test	120 Days by Test	HB,HC,HR
			NPASF	NPASF	HC
	IBISSW	LEVEL SWITCHES	NPASF	NPASF	HC
		LOCAL CONTROL SWITCHES	120 Days by Test	120 Days by Test	HB
		POSITION SWITCHES	120 Days by Test	120 Days by Test	HB,HC,HR
			NPASF	NPASF	HC
		PRESURE INDICATING SWITCHES	120 Days by Test	120 Days by Test	HR
		PRESURE SWITCHES	120 Days by Test	120 Days by Test	HC
	FILTER	FILTERS	Continuous	Continuous	HR,M
	ACCUMU	SAFETY INJECTION TANKS	Continuous	Continuous	HC
		REFUELING WATER STORAGE POOL	Continuous	Continuous	M
CONTAINMENT	VALVOP	AIR ACTUATORS	Continuous	Continuous	HB
SPRAY		MANUAL VALVE OPERATORS	Continuous	Continuous	HR
SYSTEM	VALVE	AIR OPERATED VALVES	Continuous	Continuous	HB
		CHECK VALVES	Continuous	Continuous	HC,HR
CS		MANUAL OPERATED VALVES	Continuous	Continuous	HB,HC,HR
		RELIEF VALVES	Continuous	Continuous	HR
		SOLENOID OPERATED VALVES	120 Days by Test	120 Days by Test	HC
	PUMP	CONTAINMENT SPRAY PUMPS	Continuous	Continuous	HR
	MOTOR	CONTAINMENT SPRAY PUMP MOTORS	120 Days by Test	120 Days by Test	HR
	IXMITR	CURRENT TRANSMITTERS	Continuous	Continuous	M
		MECHANICAL FLOW SENSING ELEMENTS	Continuous	Continuous	HR
		PRESURE TRANSMITTERS	120 Days by Test	120 Days by Test	HR
			Continuous	Continuous	M
		TEMPERATURE SENSORS	36 Hours by Test	36 Hours by Test	HR
	INDREC	FLOW INDICATORS	Continuous	Continuous	M
		LEVEL INDICATORS	NPASF	NPASF	HB
		PRESSURE INDICATORS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		RECORDERS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
	ICNTRL	MECHANICAL FLOW ORIFICES	Continuous	Continuous	HR
		SOLENOID CONTROL VALVES	120 Days by Test	120 Days by Test	HB
	IBISSW	POSITION SWITCHES	120 Days by Test	120 Days by Test	HB
	HTEXCH	SHUTDOWN COOLING HEAT EXCHANGERS	Continuous	Continuous	HR
	FILTER	PRESURE REGULATORS	Continuous	Continuous	HB
COMPONENT	VALVOP	AIR ACTUATORS	Continuous	Continuous	HB,HC,HT,M
COOLING		MANUAL VALVE OPERATORS	Continuous	Continuous	M
WATER	VALVE	AIR OPERATED VALVES	Continuous	Continuous	HB,HC,HT,M
SYSTEM		CHECK VALVES	Continuous	Continuous	HB,HC,M
		MANUAL OPERATED VALVES	Continuous	Continuous	HB,HC,HR,HT,M
CC		RELIEF VALVES	Continuous	Continuous	HB,HC,HR,M
	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
	PUMP	COMPONENT COOLING WATER PUMPS	Continuous	Continuous	M
	MOTOR	COOLING TOWER MOTORS	Continuous	Continuous	M
		COMPONENT COOLING WATER PUMP MOTORS	Continuous	Continuous	M
	IXMITR	MECHANICAL FLOW SENSING ELEMENTS	Continuous	Continuous	HB,HC,HR,M
		PRESSURE TRANSMITTERS	120 Days by Test	120 Days by Test	HB,HR,HT
			Continuous	Continuous	M
			NPASF	NPASF	HB,HC,HT
		TEMPERATURE SENSORS	Continuous	Continuous	M
			NPASF	NPASF	HC
	INDREC	FLOW INDICATORS	Continuous	Continuous	M
		LEVEL GLASSES	Continuous	Continuous	M
		LEVEL INDICATORS	Continuous	Continuous	M
		PRESSURE INDICATORS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
	ICNTRL	CONTROLLERS	Continuous	Continuous	M
		MECHANICAL FLOW ORIFICES	Continuous	Continuous	HR
		SOLENOID CONTROL VALVES	120 Days by Test	120 Days by Test	HB,HC,HT

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
			Continuous	Continuous	M
			NPASF	NPASF	HB
	IBISSW	FLOW INDICATING SWITCHES	Continuous	Continuous	M
			NPASF	NPASF	HC
		FLOW SWITCHES	Continuous	Continuous	M
		LEVEL SWITCHES	Continuous	Continuous	M
		LOW FLOW INDICATING SWITCHES	Continuous	Continuous	M
			NPASF	NPASF	HC
		POSITION SWITCHES	120 Days by Test	120 Days by Test	HB,HC,HT
			Continuous	Continuous	M
			NPASF	NPASF	HR
		PRESSURE SWITCHES	Continuous	Continuous	M
			NPASF	NPASF	HC
	HTEXCH	DRY COOLING TOWERS	Continuous	Continuous	M
		CCW HEAT EXCHANGERS	Continuous	Continuous	M
	BLOWER	DRY COOLING TOWER FANS	Continuous	Continuous	M
	ACCUMU	CCW SURGE TANK	Continuous	Continuous	M
AUXILIARY	VALVOP	AIR ACTUATORS	Continuous	Continuous	M
COMPONENT		MOTOR ACTUATORS	120 Days by Test	120 Days by Test	HB
COOLING WATER	VALVE	AIR OPERATED VALVES	Continuous	Continuous	M
SYSTEM		CHECK VALVES	Continuous	Continuous	HB,M
		MANUAL OPERATED VALVES	Continuous	Continuous	HB,M
ACC		RELIEF VALVES	Continuous	Continuous	HB,M
	PUMP	ACCW PUMPS	Continuous	Continuous	HB
	MOTOR	ACCW PUMP MOTORS	120 Days by Test	120 Days by Test	HB
		WET COOLING TOWER MOTORS	Continuous	Continuous	M
	IXMITR	CURRENT TRANSMITTERS	Continuous	Continuous	M
		MECHANICAL FLOW SENSING ELEMENTS	Continuous	Continuous	HB,M
		PRESSURE TRANSMITTERS	Continuous	Continuous	M
			NPASF	NPASF	HB
		TEMPERATURE SENSORS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
	INTCPM	E/P CONVERTERS	Continuous	Continuous	M
	INDREC	FLOW INDICATORS	Continuous	Continuous	M
		LEVEL INDICATORS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
	ICNTRL	MECHANICAL FLOW ORIFICES	Continuous	Continuous	HB
		SOLENOID CONTROL VALVES	Continuous	Continuous	M
	IBISSW	POSITION SWITCHES	Continuous	Continuous	M
		PRESSURE SWITCHES	Continuous	Continuous	M
			NPASF	NPASF	HB
	HTEXCH	OIL COOLERS	Continuous	Continuous	HB
		WET COOLING TOWERS	Continuous	Continuous	M
	FILTER	STRAINERS	Continuous	Continuous	HB
	BLOWER	WET COOLING TOWER FANS	Continuous	Continuous	M
EMERGENCY	VALVOP	AIR ACTUATORS	Continuous	Continuous	M
FEEDWATER		MOTOR ACTUATORS	NPASF	NPASF	HT
SYSTEM	VALVE	AIR OPERATED VALVES	Continuous	Continuous	M
		CHECK VALVES	Continuous	Continuous	M
EFW		MANUAL OPERATED VALVES	Continuous	Continuous	HR,M
		MOTOR OPERATED VALVES	Continuous	Continuous	HT
		SERVO ACTUATOR	Continuous	Continuous	M
	TURBIN	EFW TURBINE	Continuous	Continuous	M
	PUMP	EFW PUMPS	Continuous	Continuous	M
	MOTOR	EFW PUMP MOTORS	Continuous	Continuous	M
	MECFUN	TURBINE GOVERNOR	Continuous	Continuous	M
	IXMITR	MECHANICAL FLOW SENSING ELEMENTS	Continuous	Continuous	M
		PRESURE TRANSMITTERS	Continuous	Continuous	M
		SPEED SENSING PROBES	Continuous	Continuous	M
		SPEED TRANSMITTER	Continuous	Continuous	M
	INTCPM	E/P CONVERTERS	Continuous	Continuous	M
		SIGNAL CONVERTER	Continuous	Continuous	M
	INDREC	FLOW INDICATORS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		LEVEL INDICATORS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M
		RECORDER	Continuous	Continuous	M
		SPEED INDICATORS	Continuous	Continuous	M
	ICNTRL	EGM CONTROL SIGNAL CONDITIONER	Continuous	Continuous	M
		HAND CONTROLLERS	Continuous	Continuous	M
		MECHANICAL FLOW ORIFICES	Continuous	Continuous	M
		SOLENOID CONTROL VALVES	Continuous	Continuous	M
	IBISSW	DIFF PRESURE INDICATING SWITCHES	Continuous	Continuous	M
		FLOW INDICATING SWITCHES	Continuous	Continuous	M
		OVER SPEED SWITCHE	Continuous	Continuous	M
		POSITION SWITCHES	Continuous	Continuous	M
	FILTER	STRAINERS	Continuous	Continuous	M
CHILLED	VALVOP	AIR ACTUATORS	Continuous	Continuous	HR,HT,M
WATER		HYDROMOTOR ACTUATORS	120 Days by Test	120 Days by Test	HR
SYSTEM			Continuous	Continuous	M
	VALVE	AIR OPERATED VALVES	Continuous	Continuous	HR,HT,M
CHW		CHECK VALVES	Continuous	Continuous	M
		HYDOMOTOR OPERATED VALVES	Continuous	Continuous	HR,M
		MANUAL OPERATED VALVES	Continuous	Continuous	HR,M
	PUMP	CHILLED WATER PUMPS	Continuous	Continuous	M
	MOTOR	CHILLED WATER PUMP MOTORS	Continuous	Continuous	M
	IXMITR	MECHANICAL FLOW SENSING ELEMENTS	Continuous	Continuous	HR,M
		PRESSURE TRANSMITTERS	120 Days by Test	120 Days by Test	HR
			Continuous	Continuous	M
		TEMPERATURE SENSORS	Continuous	Continuous	M
	INTCPM	E/P CONVERTERS	120 Days by Test	120 Days by Test	HR
	INDREC	FLOW INDICATORS	Continuous	Continuous	M
		PRESSURE INDICATORS	Continuous	Continuous	M
		SIGHT LEVEL GLASSS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
	ICNTRL	SOLENOID CONTROL VALVES	Continuous	Continuous	M
	IBISSW	FLOW INDICATING SWITCHES	120 Days by Test	120 Days by Test	HR
			Continuous	Continuous	M
			NPASF	NPASF	HR,HT
		LEVEL SWITCHES	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	ACCUMU	CHILLED WATER EXPANSION TANKS	Continuous	Continuous	M
ESSENTIAL	XPANEL	CHILLER COMPRESSOR CONTROL PANELS	Continuous	Continuous	M
CHILLERS	VALVOP	AIR ACTUATORS	Continuous	Continuous	M
	VALVE	AIR OPERATED VALVES	Continuous	Continuous	M
RFR		CHECK VALVES	Continuous	Continuous	M
		MANUAL OPERATED VALVES	Continuous	Continuous	M
		RELIEF VALVES	Continuous	Continuous	M
	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
	RELAY	TIME DELAY RELAYS	Continuous	Continuous	M
	PUMP	MECHANICAL PUMPS	Continuous	Continuous	M
	MOTOR	COMPRESSOR MOTORS	Continuous	Continuous	M
		PUMP MOTORS	Continuous	Continuous	M
	IXMITR	CURRENT TRANSMITTERS	Continuous	Continuous	M
		TEMPERATURE SENSORS	Continuous	Continuous	M
	INDREC	AMMETERS	Continuous	Continuous	M
		LEVEL INDICATORS	Continuous	Continuous	M
		PRESSURE INDICATORS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
	ICNTRL	MECHANICAL FLOW ORIFICES	Continuous	Continuous	M
		SOLENOID CONTROL VALVES	Continuous	Continuous	M
		TEMPERATURE CONTROLLERS	Continuous	Continuous	M
	IBISSW	IMPELLER DISPLACEMENT SENSORS	Continuous	Continuous	M
		PRESSURE SWITCHES	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	HTEXCH	CHILLERS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		CONDENSERS	Continuous	Continuous	M
		COOLERS	Continuous	Continuous	M
	CKTBRK	MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M
	BLOWER	CHILLER COMPRESSORS	Continuous	Continuous	M
	ACCUMU	TANKS	Continuous	Continuous	M
CONTAINMENT	VALVOP	AIR ACTUATORS	Continuous	Continuous	HC
COOLING	VALVE	AIR OPERATED VALVES	Continuous	Continuous	HC
SYSTEM		DAMPERS	Continuous	Continuous	HC
	MOTOR	HVAC MOTORS	120 Days by Test	120 Days by Test	HC
CCS	IXMITR	PRESURE TRANSMITTERS	NPASF	NPASF	HC
		TEMPERATURE SENSORS	120 Days by Test	120 Days by Test	HC
	INDREC	RECORDERS	Continuous	Continuous	M
	ICNTRL	SOLENOID CONTROL VALVES	120 Days by Test	120 Days by Test	HC
	HTEXCH	COOLING COILS	Continuous	Continuous	HC
	BLOWER	AIR HANDLING UNITS	Continuous	Continuous	HC
		HVAC BLOWER UNITS	Continuous	Continuous	HC
CONTAINMENT	VALVOP	AIR ACTUATORS	Continuous	Continuous	HB,HC,HT,M
ISOLATION		ELECTRO-HYDRAULIC ACTUATORS	120 Days by Test	120 Days by Test	HC,M
VALVES		MANUAL DIAPHRAGM VALVES OPERATORS	Continuous	Continuous	HB,HC
		MANUAL VALVE OPERATORS	Continuous	Continuous	M
		MOTOR ACTUATORS	120 Days by Test	120 Days by Test	HB,HC
			Continuous	Continuous	M
	VALVE	AIR OPERATED VALVES	Continuous	Continuous	HB,HC,HT,M
		CHECK VALVES	Continuous	Continuous	HB,HC
		ELECTRO-HYDRAULIC OPERATED VALVES	Continuous	Continuous	HC,M
		MANUAL OPERATED VALVES	Continuous	Continuous	HB,HC,HT,M
		MOTOR OPERATED VALVES	Continuous	Continuous	HB,HC,M
		SOLENOID OPERATED VALVES	120 Days by Test	120 Days by Test	HB,HC
	ICNTRL	SOLENOID CONTROL VALVES	120 Days by Test	120 Days by Test	HB,HC,HT
			Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
	IBISSW	LOCAL CONTROL SWITCHES	120 Days by Test	120 Days by Test	HB
			Continuous	Continuous	M
		POSITION SWITCHES	120 Days by Test	120 Days by Test	HB,HC,HT,M
			Continuous	Continuous	
			NPASF	NPASF	HC
		PRESURE SWITCHES	120 Days by Test	120 Days by Test	HC
CONTAINMENT	VALVE	MANUAL OPERATED VALVE	Continuous	Continuous	HB,HC,M
PENETRATIONS	PENETR	CONTAINMENT ESCAPE AIRLOCK	Continuous	Continuous	HC
		ELECTRICAL PENETRATION ASSEMBLY	120 Days by Test	120 Days by Test	HC
CB		EMERGENCY AIR LOCK	Continuous	Continuous	HC
		EQUIPMENT HATCH	Continuous	Continuous	HC
		FUEL TRANSFER TUBE	Continuous	Continuous	HC
		MECHANICAL PENETRATION	Continuous	Continuous	HB,HC,HT
		PERSONNEL AIR LOCK	Continuous	Continuous	HC
	IXMITR	PRESSURE TRANSMITTER	120 Days by Test	120 Days by Test	HC
	IPWSUP	POWER SUPPLY	Continuous	Continuous	M
	INDREC	PRESSURE INDICATOR	Continuous	Continuous	M
	IBISSW	POSITION SWITCH	Continuous	Continuous	M
			NPASF	NPASF	HC
EMERGENCY	XPANEL	ENGINE CONTROL PANELS	Continuous	Continuous	M
DIESEL		GENERATOR CONTROL PANELS	Continuous	Continuous	M
GENERATOR	VALVE	SOLENOID CONTROL VALVES	Continuous	Continuous	M
	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
EG		POTENTIAL TRANSFORMERS	Continuous	Continuous	M
	RELAY	GENERATOR DIFFERENTIAL RELAYS	Continuous	Continuous	M
		GROUND RELAYS	Continuous	Continuous	M
		INSTANTANEOUS RELAYS	Continuous	Continuous	M
		INSTANTANEOUS ROTARY RELAYS	Continuous	Continuous	M
		LOSS OF FIELD RELAYS	Continuous	Continuous	M
		MOTORS CONTACTOR	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		OVERCURRENT RELAYS	Continuous	Continuous	M
		OVERVOLTAGE RELAYS	Continuous	Continuous	M
		REVERSE POWER RELAYS	Continuous	Continuous	M
		START SEQUENCE RELAYS	Continuous	Continuous	M
		SYNCHRONIZATION CONTROL RELAYS	Continuous	Continuous	M
		TIME DELAY RELAYS	Continuous	Continuous	M
	MECFUN	ENGINE GOVERNORS	Continuous	Continuous	M
	IXMITR	CURRENT TRANSMITTERS	Continuous	Continuous	M
		ENGINE MAGNETIC ELEMENT	Continuous	Continuous	M
		TEMPERATURE SENSORS	Continuous	Continuous	M
		THRUST BEARING SENSING ELEMENT	Continuous	Continuous	M
		TRANSDUCERS	Continuous	Continuous	M
	INDREC	AMMETERS	Continuous	Continuous	M
		METERS	Continuous	Continuous	M
		SPEED INDICATORS	Continuous	Continuous	M
		SYNCHROSCOPE	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
		VOLTMETERS	Continuous	Continuous	M
	IBISSW	TEMPERATURE SENSORS	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	GENERA	GENERATORS	Continuous	Continuous	M
	ENGINE	DIESEL ENGINES	Continuous	Continuous	M
	CKTBRK	MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M
EMERGENCY	VALVOP	PRESURE CONTROL ACTUATORS	Continuous	Continuous	M
DIESEL		SHUTOFF CONTROL VALVE ACTUATORS	Continuous	Continuous	M
GENERATOR	VALVE	CHECK VALVES	Continuous	Continuous	M
STARTING		MANUAL OPERATED VALVES	Continuous	Continuous	M
AIR		OVERSPEED TRIP VALVES	Continuous	Continuous	M
SYSTEM		PRESURE CONTROL VALVES	Continuous	Continuous	M
		PRESURE CONTROLLED VALVES	Continuous	Continuous	M
EGA		RELIEF VALVES	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		SHUTOFF CONTROL VALVES	Continuous	Continuous	M
		SOLENOID CONTROL VALVES	Continuous	Continuous	M
	MECFUN	TURNING GEAR	Continuous	Continuous	M
	IXMITR	PRESURE TRANSMITTERS	Continuous	Continuous	M
	INDREC	PRESURE INDICATORS	Continuous	Continuous	M
	IBISSW	DIFF PRESURE INDICATING SWITCHES	Continuous	Continuous	M
		PRESURE SWITCHES	Continuous	Continuous	M
		SPEED SWITCHES	Continuous	Continuous	M
		SPEED TRIP SWITCHES	Continuous	Continuous	M
	HTEXCH	INTAKE HEATERS	Continuous	Continuous	M
	FILTER	FILTERS	Continuous	Continuous	M
	BLOWER	TURBO CHARGERS	Continuous	Continuous	M
	ACCUMU	ACCUMULATORS	Continuous	Continuous	M
EMERGENCY	VALVE	CHECK VALVES	Continuous	Continuous	M
DIESEL		MANUAL OPERATED VALVES	Continuous	Continuous	M
GENERATOR	RELAY	RATIO RELAYS	Continuous	Continuous	M
JACKET	PUMP	MECHANICAL PUMPS	Continuous	Continuous	M
COOLING	MOTOR	PUMP MOTORS	Continuous	Continuous	M
WATER	IXMITR	LOOP CORRATER PROBES	Continuous	Continuous	M
SYSTEM		PRESURE TRANSMITTERS	Continuous	Continuous	M
		TEMPERATURE SENSORS	Continuous	Continuous	M
EGC	INDREC	LEVEL INDICATORS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
	IBISSW	LEVEL SWITCHES	Continuous	Continuous	M
		PRESURE SWITCHES	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	HTEXCH	JACKET WATER COOLERS	Continuous	Continuous	M
	HEATER	HEATERS	Continuous	Continuous	M
	ACCUMU	STANDPIPES	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

→(LBDCR16-004, R309)

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
EMERGENCY	VALVE	CHECK VALVES	Continuous	Continuous	M
DIESEL		MANUAL OPERATED VALVES	Continuous	Continuous	M
GENERATOR		RELIEF VALVES	Continuous	Continuous	M
FUEL	RELAY	INSTANTANEOUS RELAYS	Continuous	Continuous	M
OIL		RATIO RELAYS	Continuous	Continuous	M
SYSTEM	PUMP	DIESEL OIL TRANSFER PUMP	Continuous	Continuous	M
		ENGINE DRIVEN BOOSTER PUMP	Continuous	Continuous	M
		MOTOR DRIVEN FUEL OIL STANDBY PUMP	Continuous	Continuous	M
	MOTOR	FUEL OIL BOOSTER PUMP MOTOR	Continuous	Continuous	M
		FUEL OIL TRANSFER PUMP MOTOR	Continuous	Continuous	M
EGF	IXMITR	MECHANICAL FLOW SENSING ELEMENT	Continuous	Continuous	M
		LEVEL TRANSMITTERS	Continuous	Continuous	M
		PRESURE TRANSMITTERS	Continuous	Continuous	M
	INDREC	LEVEL INDICATORS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M
	IBISSW	DIFF PRESURE INDICATING SWITCHES	Continuous	Continuous	M
		LEVEL SWITCHES	Continuous	Continuous	M
		OVER SPEED SWITCHES	Continuous	Continuous	M
		PRESURE SWITCHES	Continuous	Continuous	M
	HTEXCH	FUEL OIL COOLERS	Continuous	Continuous	M
	FILTER	FILTERS	Continuous	Continuous	M
		STRAINERS	Continuous	Continuous	M
	ACCUMU	FUEL OIL STORAGE TANKS	Continuous	Continuous	M
		FUEL OIL FEED TANKS	Continuous	Continuous	M
EMERGENCY	VALVOP	PRESURE CONTROL ACTUATOR	Continuous	Continuous	M
DIESEL	VALVE	CHECK VALVES	Continuous	Continuous	M
GENERATOR		MANUAL OPERATED VALVES	Continuous	Continuous	M
LUBE		PRESURE CONTROLLED VALVES	Continuous	Continuous	M
OIL SYSTEM		RELIEF VALVES	Continuous	Continuous	M
	RELAY	RATIO RELAYS	Continuous	Continuous	M
EGL	PUMP	MECHANICAL PUMPS	Continuous	Continuous	M

→(LBDCR16-004,R309)

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
	MOTOR	PUMP MOTORS	Continuous	Continuous	M
	IXMITR	PRESURE TRANSMITTERS	Continuous	Continuous	M
		PRESURE TRIP SENSORS	Continuous	Continuous	M
		TEMPERATURE SENSORS	Continuous	Continuous	M
	INDREC	LEVEL INDICATORS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
	IBISSW	DIFF PRESURE INDICATING SWITCHES	Continuous	Continuous	M
		LEVEL SWITCHES	Continuous	Continuous	M
		PRESURE SWITCHES	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	HTEXCH	OIL COOLERS	Continuous	Continuous	M
	HEATER	HEATERS	Continuous	Continuous	M
	FILTER	FILTERS	Continuous	Continuous	M
		STRAINERS	Continuous	Continuous	M
SHIELD	XPANEL	HVAC CONTROL PANELS	120 Days by Test	120 Days by Test	HR
BUILDING			Continuous	Continuous	HR
VENTILLATION	VALVOP	MOTOR ACTUATORS	120 Days by Test	120 Days by Test	HR,HT
SYSTEM	VALVE	CHECK VALVES	Continuous	Continuous	HR
		MANUAL OPERATED VALVES	Continuous	Continuous	HR
SBV		MOTOR OPERATED VALVES	Continuous	Continuous	HR,HT
	RELAY	TIME DELAY RELAYS	NPASF	NPASF	HR
	MOTOR	HVAC MOTORS	120 Days by Test	120 Days by Test	HR
	IXMITR	PRESSURE TRANSMITTERS	120 Days by Test	120 Days by Test	HR,HT
			Continuous	Continuous	M
		TEMPERATURE SENSORS	120 Days by Test	120 Days by Test	HR
	INDREC	ELAPSE TIME INDICATORS	Continuous	Continuous	M
		RECORDERS	Continuous	Continuous	M
	IBISSW	DIFF PRESSURE INDICATING SWITCHES	120 Days by Test	120 Days by Test	HR,HT
			Continuous	Continuous	M
		POSITION SWITCHES	NPASF	NPASF	HR

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		TEMPERATURE SWITCHES	NPASF	NPASF	HR
	HEATER	HVAC HEATERS	120 Days by Test	120 Days by Test	HR
	FILTER	FILTERS	Continuous	Continuous	HR
	BLOWER	HVAC BLOWER UNITS	Continuous	Continuous	HR
CONTAINMENT	VALVOP	AIR ACTUATORS	Continuous	Continuous	HC,HT
AIR RELEASE		MOTOR ACTUATORS	120 Days by Test	120 Days by Test	HC,HR
SYSTEM	VALVE	AIR OPERATED VALVES	Continuous	Continuous	HC,HT
		CHECK VALVES	Continuous	Continuous	HC
CAR		MANUAL OPERATED VALVES	Continuous	Continuous	HC,HT
		MOTOR OPERATED VALVES	Continuous	Continuous	HC,HR,HT
	MOTOR	HVAC MOTORS	120 Days by Test	120 Days by Test	HR
	ICNTRL	SOLENOID CONTROL VALVES	120 Days by Test	120 Days by Test	HC,HT
	IBISSW	POSITION SWITCHES	120 Days by Test	120 Days by Test	HC,HR,HT
			NPASF	NPASF	HT
	BLOWER	HVAC BLOWER UNITS	Continuous	Continuous	HR
CONTROL	XPANEL	HVAC CONTROL PANELS	Continuous	Continuous	M
ROOM	VALVOP	AIR ACTUATORS	Continuous	Continuous	M
HEATING		HYDROMOTOR ACTUATORS	Continuous	Continuous	M
AND		MOTOR ACTUATORS	120 Days by Test	120 Days by Test	HR
VENTILLATION		MOTOR ACTUATORS	Continuous	Continuous	M
	VALVE	AIR OPERATED VALVES	Continuous	Continuous	M
HVC		DAMPERS	Continuous	Continuous	M
		HYDOMOTOR OPERATED DAMPERS	Continuous	Continuous	M
		MANUAL OPERATED VALVES	Continuous	Continuous	M
		MOTOR OPERATED VALVES	Continuous	Continuous	HR
		MOTOR OPERATED VALVES	Continuous	Continuous	M
	RELAY	TIME DELAY RELAYS	Continuous	Continuous	M
	MOTOR	HVAC MOTORS	Continuous	Continuous	M
	IXMITR	DIFFERENTIAL PRESURE TRANSMITTERS	Continuous	Continuous	M
		MECHANICAL FLOW SENSING ELEMENTS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		FLOW TRANSMITTERS	Continuous	Continuous	M
		PRESURE TRANSMITTERS	Continuous	Continuous	M
		TEMPERATURE SENSORS	Continuous	Continuous	M
	INDREC	ELAPSE TIME INDICATORS	Continuous	Continuous	M
		FLOW INDICATORS	Continuous	Continuous	M
		INDICATOR	Continuous	Continuous	M
		PRESURE INDICATOR	Continuous	Continuous	M
		RECORDERS	Continuous	Continuous	M
	ICNTRL	CONTROLLERS	Continuous	Continuous	M
		SOLENOID CONTROL VALVES	Continuous	Continuous	M
	IBISSW	DIFF PRESURE INDICATING SWITCHES	Continuous	Continuous	M
		POSITION SWITCHES	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	HEATER	HVAC HEATERS	Continuous	Continuous	M
	BLOWER	AIR HANDLING UNITS	Continuous	Continuous	M
		HVAC BLOWER UNITS	Continuous	Continuous	M
CABLE VAULT	XPANEL	HEATER CONTROL PANELS	Continuous	Continuous	M
AND	VALVOP	AIR ACTUATORS	Continuous	Continuous	M
SWITCHGEAR		HYDROMOTOR ACTUATORS	Continuous	Continuous	M
HVAC	VALVE	AIR OPERATED VALVES	Continuous	Continuous	M
		DAMPERS	Continuous	Continuous	M
SVS	MOTOR	HVAC MOTORS	Continuous	Continuous	M
	IXMITR	TEMPERATURE SENSORS	Continuous	Continuous	M
	ICNTRL	SOLENOID CONTROL VALVES	Continuous	Continuous	M
	IBISSW	POSITION SWITCHES	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	HEATER	HVAC HEATERS	Continuous	Continuous	M
	BLOWER	AIR HANDLING UNITS	Continuous	Continuous	M
		HVAC BLOWER UNITS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
HEATING	VALVOP	HYDROMOTOR ACTUATOR	Continuous	Continuous	M
AND	VALVE	DAMPER	Continuous	Continuous	M
VENTILLATION		HYDOMOTOR OPERATED DAMPER	Continuous	Continuous	M
ROOM (299)	MOTOR	HVAC MOTOR	Continuous	Continuous	M
RAB+46	IXMITR	MECHANICAL FLOW SENSING ELEMENT	Continuous	Continuous	M
HVAC		TEMPERATURE SENSOR	120 Days by Test	120 Days by Test	HR
	IBISSW	POSITION SWITCH	Continuous	Continuous	M
HVR-H&V	BLOWER	AIR HANDLING UNIT	Continuous	Continuous	M
		HVAC BLOWER UNIT	Continuous	Continuous	M
DIESEL	VALVOP	AIR ACTUATORS	Continuous	Continuous	M
GENERATOR		HYDROMOTOR ACTUATORS	Continuous	Continuous	M
ROOM	VALVE	AIR OPERATED VALVES	Continuous	Continuous	M
HVAC		DAMPERS	Continuous	Continuous	M
		HYDOMOTOR OPERATED DAMPERS	Continuous	Continuous	M
HVR-EG	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
	MOTOR	HVAC MOTORS	Continuous	Continuous	M
	IXMITR	CURRENT TRANSMITTERS	Continuous	Continuous	M
		TEMPERATURE SENSORS	Continuous	Continuous	M
	INDREC	TEMPERATURE INDICATORS	Continuous	Continuous	M
	ICNTRL	SOLENOID CONTROL VALVES	Continuous	Continuous	M
	IBISSW	POSITION SWITCHES	Continuous	Continuous	M
	BLOWER	HVAC BLOWER UNITS	Continuous	Continuous	M
RAB BUILDING	XPANEL	HVAC CONTROL PANELS	120 Days by Test	120 Days by Test	HR
EMERGENCY		MAIN CONTROL PANELS	Continuous	Continuous	HR
EXHAUST	VALVOP	AIR ACTUATOR	Continuous	Continuous	HB,HR,HT,M
HVAC		HYDROMOTOR ACTUATOR	NPASF	NPASF	HR
		MOTOR ACTUATOR	120 Days by Test	120 Days by Test	HR
HVR-CVAS	VALVE	AIR OPERATED VALVES	Continuous	Continuous	HB,HR,HT,M
		DAMPERS	Continuous	Continuous	HR
		HYDROMOTOR OPERATED DAMPERS	Continuous	Continuous	HR

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		MANUAL OPERATED VALVES	Continuous	Continuous	HB,HR,M
		MOTOR OPERATED VALVES	Continuous	Continuous	HR
	RELAY	TIME DELAY RELAYS	Continuous	Continuous	HR
	MOTOR	HVAC MOTORS	120 Days by Test	120 Days by Test	HR
	IXMITR	DIFFERENTIAL PRESURE TRANSMITTERS	120 Days by Test	120 Days by Test	HB
			Continuous	Continuous	M
		MECHANICAL FLOW SENSING ELEMENT	Continuous	Continuous	HR
		PRESURE TRANSMITTERS	120 Days by Test	120 Days by Test	HR
		TEMPERATURE SENSORS	120 Days by Test	120 Days by Test	HR
	ICNTRL	SOLENOID CONTROL VALVES	120 Days by Test	120 Days by Test	HB,HT
			Continuous	Continuous	M
			NPASF	NPASF	HR
	IBISSW	DIFF PRESSURE INDICATING SWITCHES	120 Days by Test	120 Days by Test	HR
		POSITION SWITCHES	120 Days by Test	120 Days by Test	HB,HR,HT
			Continuous	Continuous	M
		TEMPERATURE SWITCHES	NPASF	NPASF	HR
	HEATER	HVAC HEATERS	120 Days by Test	120 Days by Test	HR
	FILTER	AIR HANDLING UNITS	Continuous	Continuous	HR
	BLOWER	HVAC BLOWER UNITS	Continuous	Continuous	HR
FAN	MOTOR	FAN COOLER MOTORS	120 Days by Test	120 Days by Test	HR
COOLERS			Continuous	Continuous	M
	IXMITR	TEMPERATURE SENSORS	120 Days by Test	120 Days by Test	HR
HVR-FC			Continuous	Continuous	M
			NPASF	NPASF	HR
	IBISSW	LOCAL CONTROL SWITCHES	120 Days by Test	120 Days by Test	HR
			Continuous	Continuous	M
	BLOWER	FAN COOLER AIR HANDLING UNITS	Continuous	Continuous	HR,M
		FAN COOLER BLOWER UNITS	Continuous	Continuous	HR,M
FUEL	XPANEL	HVAC CONTROL PANELS	Continuous	Continuous	M
BUILDING	VALVOP	AIR ACTUATORS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
HVAC		HYDROMOTOR ACTUATORS	Continuous	Continuous	M
	VALVE	AIR OPERATED VALVES	Continuous	Continuous	M
HVF		DAMPERS	Continuous	Continuous	M
		HYDOMOTOR OPERATED DAMPERS	Continuous	Continuous	M
		MANUAL OPERATED VALVES	Continuous	Continuous	M
	RELAY	TIME DELAY RELAYS	Continuous	Continuous	M
	MOTOR	HVAC MOTORS	Continuous	Continuous	M
	IXMITR	DIFFERENTIAL PRESURE TRANSMITTERS	Continuous	Continuous	M
		PRESURE TRANSMITTERS	Continuous	Continuous	M
		TEMPERATURE SENSORS	Continuous	Continuous	M
	INDREC	ELAPSE TIME INDICATORS	Continuous	Continuous	M
	ICNTRL	CONTROLLERS	Continuous	Continuous	M
		SOLENOID CONTROL VALVES	Continuous	Continuous	M
	IBISSW	POSITION SWITCHES	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	HEATER	HVAC HEATERS	Continuous	Continuous	M
	BLOWER	AIR HANDLING UNITS	Continuous	Continuous	M
		HVAC BLOWER UNITS	Continuous	Continuous	M
HYDROGEN	XPANEL	ANALYZER CONTROL PANELS	Continuous	Continuous	M
ANALYZER		ANALYZER POWER SUPPLY PANELS	Continuous	Continuous	M
AND	VALVE	CHECK VALVES	120 Days by Test	120 Days by Test	HB
RECOMBINER			Continuous	Continuous	HC
SYSTEM		MANUAL OPERATED VALVES	120 Days by Test	120 Days by Test	HB
			Continuous	Continuous	HB,HC,HT
HRA		SOLENOID CONTROL VALVES	120 Days by Test	120 Days by Test	HB
		SOLENOID OPERATED VALVES	120 Days by Test	120 Days by Test	HB,HC
	TRANSF	CURRENT TRANSFORMERS	120 Days by Test	120 Days by Test	HB
		POTENTIAL TRANSFORMERS	Continuous	Continuous	M
	RELAY	INSTANTANEOUS RELAYS	120 Days by Test	120 Days by Test	HB
			Continuous	Continuous	HB,M
		TIME DELAY RELAYS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
	RECOMB	RECOMBINERS	120 Days by Test	120 Days by Test	HC
	PUMP	MECHANICAL PUMPS	120 Days by Test	120 Days by Test	HB
	MOTOR	PUMP MOTORS	120 Days by Test	120 Days by Test	HB
	IXMITR	ANALYZER TRANSMITTERS	120 Days by Test	120 Days by Test	HB
		HYDROGEN ANALYZERS	120 Days by Test	120 Days by Test	HB
		HYDROGEN ANALYZER TRANSMITTERS	Continuous	Continuous	M
		PRESURE TRANSMITTERS	120 Days by Test	120 Days by Test	HB
	IXMITR	TEMPERATURE SENSORS	NPASF	NPASF	HC
	IPWSUP	POWER SUPPLYS	120 Days by Test	120 Days by Test	HB
			Continuous	Continuous	M
	INTCPM	AMPLIFIER BOARDS	Continuous	Continuous	M
		E/I CONVERTERS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M
	INDREC	FLOW INDICATORS	120 Days by Test	120 Days by Test	HB
		POWER METERS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M
		RECORDERS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
	IBISSW	ALARM INDICATION SWITCHES	120 Days by Test	120 Days by Test	HB
		FLOW SWITCHES	120 Days by Test	120 Days by Test	HB
		PRESURE SWITCHES	120 Days by Test	120 Days by Test	HB
		TEMPERATURE SWITCHES	120 Days by Test	120 Days by Test	HB
	HTEXCH	SAMPLE COOLERS	120 Days by Test	120 Days by Test	HB
	HEATER	HEATERS	120 Days by Test	120 Days by Test	HC
	FILTER	FILTERS	120 Days by Test	120 Days by Test	HB
ESSENTIAL	XPANEL	ESFAS CABINETS	Continuous	Continuous	M
SAFETY	RELAY	ACTUATION RELAYS	Continuous	Continuous	M
FEATURES		CSAS ACTUATION RELAYS	Continuous	Continuous	M
ACTUATION		EFAS1 ACTUATION RELAYS	Continuous	Continuous	M
SYSTEM		EFAS2 ACTUATION RELAYS	Continuous	Continuous	M
		ESF ACTUATION RELAYS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
ESF		ESF TEST RELAYS	Continuous	Continuous	M
		INSTANTANEOUS RELAYS	Continuous	Continuous	M
		INSTANTANEOUS ROTARY RELAYS	Continuous	Continuous	M
		LOCKOUT RELAYS	Continuous	Continuous	M
		MSIS ACTUATION RELAYS	Continuous	Continuous	M
		RAS ACTUATION RELAYS	Continuous	Continuous	M
		SIAS ACTUATION RELAYS	Continuous	Continuous	M
	IXMITR	PRESURE TRANSMITTERS	120 Days by Test	120 Days by Test	HB,HC
	IPWSUP	POWER SUPPLYS	Continuous	Continuous	M
	INDREC	PRESURE INDICATORS	Continuous	Continuous	M
		RECORDERS	Continuous	Continuous	M
	IBISSW	DOOR POSITION SWITCHES	Continuous	Continuous	M
	CKTBRK	MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M
PLANT	XPANEL	PPS CONTROL PANELS	Continuous	Continuous	M
PROTECTION		RPS CABINET	Continuous	Continuous	M
SYSTEM	RELAY	ACTUATION RELAYS	Continuous	Continuous	M
		BISTABLE CONTROL RELAYS	Continuous	Continuous	M
PPS		ESF TRIP PATH RELAYS	Continuous	Continuous	M
		INSTANTANEOUS RELAYS	Continuous	Continuous	M
		INSTANTANEOUS ROTARY RELAYS	Continuous	Continuous	M
		MATRIX RELAY CARDS	Continuous	Continuous	M
		MOTORS CONTACTOR	Continuous	Continuous	M
		POWER INDICATING RELAYS	Continuous	Continuous	M
		PPS RELAY CARDS	Continuous	Continuous	M
		PPS TRIP PATH RELAYS	Continuous	Continuous	M
		RESET RELAYS	Continuous	Continuous	M
		RPS MATRIX RELAY CARDS	Continuous	Continuous	M
		TRIP PATH RELAYS	Continuous	Continuous	M
	IXMITR	DIRECTION VARIABLE SET POINT CARDS	Continuous	Continuous	M
	IPWSUP	POWER SUPPLYS	Continuous	Continuous	M
	INTCPM	BISTABLE CONTROL RELAY PANELS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		BISTABLE INDICATORS LOGIC CARDS	Continuous	Continuous	M
		BISTABLE TEST & CALIBRATION CARDS	Continuous	Continuous	M
		GROUND DETECTOR CARDS	Continuous	Continuous	M
		PPS RELAY CARDS	Continuous	Continuous	M
		PRESURE SETPOINT CARDS	Continuous	Continuous	M
		SG PRESURE SETPOINT CARDS	Continuous	Continuous	M
	INDREC	INDICATOR LOGICS	Continuous	Continuous	M
	ICNTRL	LATCHING SOLENOIDS	Continuous	Continuous	M
	IBISSW	BISTABLE COMPARATOR CARDS	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	CKTBRK	MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M
POST ACCIDENT	XPANEL	CHEMICAL & VOLUME CONTROL PANEL	Continuous	Continuous	M
MONITORING		COOLING TOWER CONTROL PANEL	Continuous	Continuous	M
EQUIPMENT		ENGINEERED SAFEGUARD CONTROL PANEL	Continuous	Continuous	M
		INSTRUMENT CABINETS	Continuous	Continuous	M
PAM		REACTOR CONTROL PANEL	Continuous	Continuous	M
		RPS CABINET	Continuous	Continuous	M
		TURBINE CONTROL PANEL	Continuous	Continuous	M
	VALVE	SOLENOID OPERATED VALVES	120 Days by Test	120 Days by Test	HB,HC
	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
		POTENTIAL TRANSFORMERS	Continuous	Continuous	M
	RELAY	GROUND RELAYS	Continuous	Continuous	M
	IXMITR	MECHANICAL FLOW SENSING ELEMENTS	Continuous	Continuous	HB,HR,M
		FLOW TRANSMITTERS	120 Days by Test	120 Days by Test	HT
			Continuous	Continuous	M
		HJTCS	120 Days by Test	120 Days by Test	HC
		CORE EXIT THERMOCOUPLES (CET)	120 Days by Test	120 Days by Test	HC
		HYDROGEN ANALYZERS	120 Days by Test	120 Days by Test	HB
		LEVEL TRANSMITTERS	120 Days by Test	120 Days by Test	HC
		NEUTRON FLUX DETECTORS	120 Days by Test	120 Days by Test	HC
		PRESURE TRANSMITTERS	120 Days by Test	120 Days by Test	HB,HC,HR,HT

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
			Continuous	Continuous	M
		RADIATION DETECTORS	120 Days by Test	120 Days by Test	HC,HT
		RADIATION DETECTOR MICROPROCESORS	120 Days by Test	120 Days by Test	HT
		TEMPERATURE SENSORS	120 Days by Test	120 Days by Test	HB,HC,HR
			Continuous	Continuous	M
		TRANSDUCERS	Continuous	Continuous	M
		VIBRATION MONITORS	30 Min by Test	30 Min by Test	HC
	INTCPM	E/P CONVERTERS	Continuous	Continuous	M
	INDREC	AMMETERS	Continuous	Continuous	M
		FLOW INDICATORS	Continuous	Continuous	M
		LEVEL INDICATORS	Continuous	Continuous	M
		LOG POWER INDICATORS	Continuous	Continuous	M
		METERS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M
		RADIATION INDICATORS	Continuous	Continuous	M
		RECORDERS	Continuous	Continuous	M
		TEMPERATURE INDICATORS	Continuous	Continuous	M
		VOLTMETERS	Continuous	Continuous	M
	ICNTRL	HAND CONTROLLERS	Continuous	Continuous	M
	IBISSW	CEA REED SWITCHES	NPASF	NPASF	HC
		LEVEL SWITCHES	Continuous	Continuous	M
		MOTOR ACTUATORS POSITION SWITCHES	120 Days by Test	120 Days by Test	HB,HC,HR,HT
			Continuous	Continuous	M
		POSITION SWITCHES	120 Days by Test	120 Days by Test	HB,HC,HR,HT
			Continuous	Continuous	M
		PRESURE SWITCHES	Continuous	Continuous	M
	ELECON	HJTC PREFABRICATED CABLES	120 Days by Test	120 Days by Test	HC
		CET PREFABRICATED CABLES	120 Days by Test	120 Days by Test	HC
	CKTBRK	DISCONNECTS	Continuous	Continuous	M
AREA	VALVE	CHECK VALVES	Continuous	Continuous	HB,HC

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
RADIATION		MANUAL OPERATED VALVES	Continuous	Continuous	HB,HC
MONITORS		SOLENOID OPERATED VALVES	120 Days by Test	120 Days by Test	HB,HC
	IXMITR	RADIATION DETECTORS	120 Days by Test	120 Days by Test	HC,HT
ARM			90 Min by Test	90 Min by Test	HC
			Continuous	Continuous	M
			NPASF	NPASF	HT
		RADIATION DETECTOR MICROPROCESOR	120 Days by Test	120 Days by Test	HB,HT
			90 Min by Test	90 Min by Test	HB
			Continuous	Continuous	M
			NPASF	NPASF	HT
	IPWSUP	POWER SUPPLYS	Continuous	Continuous	M
	INTCPM	ISOLATION DEVICE	Continuous	Continuous	M
	INDREC	RADIATION INDICATORS	Continuous	Continuous	M
		RECORDERS	Continuous	Continuous	M
		RL-10 REMOTE INDICATORS	NPASF	NPASF	HC
PROCESS	VALVOP	ELECTRIC VALVE OPERATORS	120 Days by Test	120 Days by Test	HT
RADAITION			Continuous	Continuous	M
MONITORS			NPASF	NPASF	HB,HT
		FLOW CONTROL ACTUATORS	NPASF	NPASF	HT
PRM	VALVE	CHECK VALVES	120 Days by Test	120 Days by Test	HT
		ELECTRICALLY OPERATED VALVES	120 Days by Test	120 Days by Test	HT
			Continuous	Continuous	HT,M
		FLOW CONTROL VALVES	Continuous	Continuous	HT
		MANUAL OPERATED VALVES	120 Days by Test	120 Days by Test	HT
			Continuous	Continuous	HB,HT,M
		SOLENOID CONTROL VALVES	120 Days by Test	120 Days by Test	HT
	RELAY	INSTANTANEOUS RELAYS	Continuous	Continuous	HT
		TIME DELAY RELAYS	Continuous	Continuous	HB
	PUMP	MECHANICAL PUMPS	120 Days by Test	120 Days by Test	HT
			Continuous	Continuous	HB,HT
	MOTOR	PUMP MOTORS	120 Days by Test	120 Days by Test	HT

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
			NPASF	NPASF	HB,HT
	IXMITR	FLOW TRANSMITTERS	120 Days by Test	120 Days by Test	HT
			Continuous	Continuous	M
			NPASF	NPASF	HB,HT
		POSITION TRANSMITTERS	NPASF	NPASF	HT
		RADIATION DETECTORS	120 Days by Test	120 Days by Test	HT
			Continuous	Continuous	M
			NPASF	NPASF	HB,HT
		RADIATION DETECTOR MICROPROCESSORS	120 Days by Test	120 Days by Test	HT
			Continuous	Continuous	M
			NPASF	NPASF	HB,HT
	INDREC	FLOW INDICATORS	NPASF	NPASF	HB,HT
		RADIATION INDICATORS	Continuous	Continuous	M
		RECORDERS	Continuous	Continuous	M
	ICNTRL	FLOW CONTROLLERS	120 Days by Test	120 Days by Test	HT
		MOISTURE CONTROL UNITS	Continuous	Continuous	HB
	IBISSW	LEVEL SWITCHES	NPASF	NPASF	HB
		TEMPERATURE SWITCHES	Continuous	Continuous	M
			NPASF	NPASF	HT
	HTEXCH	HEAT EXCHANGERS	Continuous	Continuous	M
	FILTER	FILTERS	Continuous	Continuous	HT
	AIRDRY	AIR DRYERS	Continuous	Continuous	HB
4.16 KVAC	XPANEL	4.16KV SWITCHESGEAR	Continuous	Continuous	M
SWITCHGEAR	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
ELECTRICAL		POTENTIAL TRANSFORMERS	Continuous	Continuous	M
DISTRIBUTION	RELAY	74 ALARM RELAYS	Continuous	Continuous	M
SYSTEM		ANNUNCIATION RELAYS	Continuous	Continuous	M
		BUSTIE TIMING RELAYS	Continuous	Continuous	M
4KV		GROUND RELAYS	Continuous	Continuous	M
		INSTANTANEOUS RELAYS	Continuous	Continuous	M
		PHASE OVERCURRENT RELAYS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		SYNC CHECK RELAY	Continuous	Continuous	M
		TIME DELAY RELAYS	Continuous	Continuous	M
		UNDERVOLTAGE RELAYS	Continuous	Continuous	M
	IXMITR	CURRENT TRANSMITTERS	Continuous	Continuous	M
	INDREC	AMMETERS	Continuous	Continuous	M
		VOLTMETERS	Continuous	Continuous	M
	HEATER	CUBICAL SPACE HEATER	Continuous	Continuous	M
	CKTBRK	4.16KV AIR CIRCUIT BREAKERS	Continuous	Continuous	M
		FUSE DISCONNECTS	Continuous	Continuous	M
		MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M
480 VAC	XPANEL	480 VAC LOAD CENTERS	Continuous	Continuous	M
LOAD CENTER	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
DISTRIBUTION		POTENTIAL TRANSFORMERS	Continuous	Continuous	M
SYSTEM	RELAY	74 ALARM RELAYS	Continuous	Continuous	M
		GROUND OVERCURRENT RELAYS	Continuous	Continuous	M
SSD-LC		INSTANTANEOUS RELAYS	Continuous	Continuous	M
		MCC GROUND OVERCURRENT RELAYS	Continuous	Continuous	M
		MOTORS CONTACTORS	Continuous	Continuous	M
		OVERCURRENT RELAYS	Continuous	Continuous	M
		OVERVOLTAGE RELAYS	Continuous	Continuous	M
		PHASE OVERCURRENT RELAYS	Continuous	Continuous	M
		UNDERVOLTAGE RELAYS	Continuous	Continuous	M
	IXMITR	CURRENT TRANSMITTERS	Continuous	Continuous	M
	INDREC	AMMETERS	Continuous	Continuous	M
		VOLTMETERS	Continuous	Continuous	M
	IBISSW	TEMPERATURE INDICATING SWITCHES	Continuous	Continuous	M
	CKTBRK	480 VAC AIR CIRCUIT BREAKERS	Continuous	Continuous	M
		MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M
480 VAC	XPANEL	MCC 120 VAC DISTRIBUTION PANELS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
MOTOR CONTROL		MCC 120 VAC DISTRIBUTION PANEL FUSES	Continuous	Continuous	M
CENTER		MOTORS CONTROL CENTERS	Continuous	Continuous	M
DISTRIBUTION	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
SYSTEM		POTENTIAL TRANSFORMERS	Continuous	Continuous	M
	RELAY	74 ALARM RELAYS	Continuous	Continuous	M
SSD-MCC		ALARM RELAYS	Continuous	Continuous	M
		GROUND RELAYS	Continuous	Continuous	M
		MOTOR CONTACTORS	Continuous	Continuous	M
		OVERVOLTAGE RELAYS	Continuous	Continuous	M
		PHASE OVERCURRENT RELAYS	Continuous	Continuous	M
		TIME DELAY RELAYS	Continuous	Continuous	M
		UNDERVOLTAGE RELAY	Continuous	Continuous	M
	INDREC	AMMETERS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M
		VOLTMETERS	Continuous	Continuous	M
	CKTBRK	MCC MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M
INSTRUMENTS	XPANEL	COOLING TOWER CONTROL PANELS	Continuous	Continuous	M
CABINETS		ENGINEERED SAFEGUARD CONTROL PANEL	Continuous	Continuous	M
AND		INSTRUMENT CABINETS	Continuous	Continuous	HB,HC,HR,HT,M
PANELS		INSTRUMENT CABINET AUX RELAY PANEL	Continuous	Continuous	M
		ISOLATION CABINET	Continuous	Continuous	M
IC		REMOTE SHUTDOWN CONTROL PANEL	Continuous	Continuous	M
	RELAY	ANNUNCIATION RELAY	Continuous	Continuous	M
		GROUND RELAY	Continuous	Continuous	M
		INSTANTANEOUS RELAY	Continuous	Continuous	M
		INSTANTANEOUS ROTARY RELAY	Continuous	Continuous	M
		MOTORS CONTACTOR	Continuous	Continuous	M
		SYNC CHECK RELAYS	Continuous	Continuous	M
		TIME DELAY RELAYS	Continuous	Continuous	M
		TIMING RELAYS	Continuous	Continuous	M
		UNDERVOLTAGE RELAY	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
	IXMITR	CURRENT TRANSMITTERS	Continuous	Continuous	M
		TEMPERATURE SENSORS	Continuous	Continuous	M
	ISODEV	ISOLATION MODULES	Continuous	Continuous	M
		ISOLATORS	Continuous	Continuous	M
		OPTICAL ISOLATORS	Continuous	Continuous	M
	IPWSUP	POWER SUPPLYS	Continuous	Continuous	M
	INDREC	OPTICAL ISOLATORS	Continuous	Continuous	M
		PRESURE INDICATORS	Continuous	Continuous	M
	IBISSW	DOOR POSITION SWITCHES	Continuous	Continuous	M
		FLOW SWITCHES	Continuous	Continuous	M
		LOCAL CONTROL SWITCHES	Continuous	Continuous	M
		POSITION SWITCHES	Continuous	Continuous	M
		TEMPERATURE SWITCHES	Continuous	Continuous	M
	CKTBRK	MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M
	CKTBRK	120 VAC DISTRIBUTION PANEL CIRCUIT BREAKERS	Continuous	Continuous	M
INVERTERS	XPANEL	SUPS AC POWER DISTRIBUTION PANEL	Continuous	Continuous	M
AND	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
DISTRIBUTION		POTENTIAL TRANSFORMERS	Continuous	Continuous	M
PANELS	RELAY	ALARM RELAYS	Continuous	Continuous	M
		INSTANTANEOUS RELAYS	Continuous	Continuous	M
ID		OVERVOLTAGE RELAYS	Continuous	Continuous	M
	IXMITR	CURRENT TRANSMITTERS	Continuous	Continuous	M
	IPWSUP	ANNUNCIATOR POWER SUPPLYS	Continuous	Continuous	M
	INTCPM	VOLTAGE SENSING BOARDS	Continuous	Continuous	M
	INDREC	AMMETER	Continuous	Continuous	M
		METER	Continuous	Continuous	M
		VOLTMETERS	Continuous	Continuous	M
	GENERA	UNINTERRUPTIBLE POWER SUPPLY	Continuous	Continuous	M
	CKTBRK	MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
	CKTBRK	120 VAC DISTRIBUTION PANEL CIRCUIT BREAKERS	Continuous	Continuous	HT
	CKTBRK	120 VAC DISTRIBUTION PANEL CIRCUIT BREAKERS	Continuous	Continuous	M
LOW VOLTAGE	XPANEL	120 VAC POWER DISTRIBUTION PANELS	Continuous	Continuous	M
DISTRIBUTION	TRANSF	POTENTIAL TRANSFORMERS	Continuous	Continuous	M
PANELS	CKTBRK	AC DISTRIBUTION PANEL CIRCUIT BREAKERS	Continuous	Continuous	M
LVD		MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M
125 VDC	XPANEL	125 VDC POWER DISTRIBUTION PANELS	Continuous	Continuous	M
DISTRIBUTION	TRANSF	CURRENT TRANSFORMERS	Continuous	Continuous	M
SYSTEM		POTENTIAL TRANSFORMERS	Continuous	Continuous	M
	RELAY	ALARM RELAYS	Continuous	Continuous	M
DC		GROUND RELAYS	Continuous	Continuous	M
		INSTANTANEOUS RELAYS	Continuous	Continuous	M
		UNDER VOLTAGE RELAYS	Continuous	Continuous	M
		VOLTAGE ALARM RELAYS	Continuous	Continuous	M
	IXMITR	TRANSDUCER	Continuous	Continuous	M
	INDREC	AMMETERS	Continuous	Continuous	M
		VOLTMETERS	Continuous	Continuous	M
	CKTBRK	BATTERY CHARGER AC ISOLATION BREAKERS	Continuous	Continuous	M
		CHARGER DC FEEDER BREAKERS	Continuous	Continuous	M
		CHARGER DC ISOLATION BREAKERS	Continuous	Continuous	M
		DC DISTRIBUTION PANEL CIRCUIT BREAKERS	Continuous	Continuous	M
		DISCONNECT	Continuous	Continuous	M
	BATTRY	BATTERY CHARGERS	Continuous	Continuous	M
		LEAD ACID STORAGE BATTERIES	Continuous	Continuous	M
PROCESS	XPANEL	PAC BOP CABNIETS	Continuous	Continuous	M
ANALOG		PAC POWER ISOLATION PANELS	Continuous	Continuous	M
CONTROL		PAC PROTECTIVE CHANNEL CABINETS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
SYSTEM	RELAY	PAC NAI ANNUNCIATOR INTERFACE CARDS	Continuous	Continuous	M
		PAC NCO CONTACT OUTPUT CARDS	Continuous	Continuous	M
PAC		PAC NCT CHANNEL TEST CARDS	Continuous	Continuous	M
		PAC NRC RELAY CARDS	Continuous	Continuous	M
	ISODEV	ISOLATION DEVICES	Continuous	Continuous	M
		PAC FUNCTION GENERATOR CARDS	Continuous	Continuous	M
		PAC NAI ANNUNCIATOR INTERFACE CARDS	Continuous	Continuous	M
		PAC NCH FUNCTION GENERATOR CARDS	Continuous	Continuous	M
		PAC NCI COMPUTER INPUT CARDS	Continuous	Continuous	M
		PAC NCT CHANNEL TEST CARDS	Continuous	Continuous	M
		PAC NLP LOOP POWER SUPPLY CARDS	Continuous	Continuous	M
		PAC NTC TEMP CHANNEL TEST CARDS	Continuous	Continuous	M
	IPWSUP	POWER SUPPLYS	Continuous	Continuous	M
	INTCPM	PAC FUNCTION GENERATOR CARDS	Continuous	Continuous	M
		PAC NAC ANALOG COMPARATOR CARDS	Continuous	Continuous	M
		PAC NAL SIGNAL COMPARATOR CARDS	Continuous	Continuous	M
		PAC NCH FUNCTION GENERATOR CARDS	Continuous	Continuous	M
		PAC NDI DIGITAL INPUT CARDS	Continuous	Continuous	M
		PAC NLL LEAD LAG CARDS	Continuous	Continuous	M
		PAC NMA MIXING AMPLIFIER CARDS	Continuous	Continuous	M
		PAC NPC POTENTIOMETER CONTROL CARDS	Continuous	Continuous	M
		PAC NPL PROM LOGIC CARDS	Continuous	Continuous	M
		PAC NRA RTD AMPLIFIER CARDS	Continuous	Continuous	M
		PAC NSA SUMMING AMPLIFIER CARDS	Continuous	Continuous	M
		PAC NTD TRACKING DRIVER CARDS	Continuous	Continuous	M
		SIGNAL CONVERTERS	Continuous	Continuous	M
		THERMOCOUPLE AMPLIFIERS	Continuous	Continuous	M
	ICNTRL	PAC NCB COMPARATOR CARDS	Continuous	Continuous	M
	IBISSW	ANALOG INPUT COMPARATOR CARDS	Continuous	Continuous	M
		ANNUNCIATOR INTERFACES	Continuous	Continuous	M
		ANNUNCIATOR LOGIC CARDS	Continuous	Continuous	M
		CONTACT OUTPUT CARDS	Continuous	Continuous	M

OPERABILITY REQUIREMENTS FOR EQUIPMENT REQUIRED TO FUNCTION DURING AND SUBSEQUENT TO ANY DESIGN BASIS ACCIDENT

SYSTEM	NPRDS CODE	EQUIPMENT DESCRIPTION	LOCA	MSLB	ENV CLASS
		DIFF PRES INPUT SIGNAL COMPARATORS	Continuous	Continuous	M
		INPUT SIGNAL COMPARATORS	Continuous	Continuous	M
		OPEN DOOR POSITION SWITCHES	Continuous	Continuous	M
		POWER SUPPLY CARDS	Continuous	Continuous	M
	CKTBRK	MOLDED CASE CIRCUIT BREAKERS	Continuous	Continuous	M

←(DRN 01-388)

TABLE 3.11-3

SAFETY RELATED EQUIPMENT DESIGNED FOR NONSEISMIC VIBRATION

Equipment	Standard or Requirement
A. Containment spray pumps Component cooling water pumps Auxiliary component cooling LPSI pumps HPSI pumps Chilled water pumps	Pump bearing housing and pump shaft vibration double amplitude is limited to ≤ .003 in.
B. Emergency feed water pumps	Pump bearing housing and pump shaft vibration peak to peak is limited to ≤ 0.001 in. at speeds up to 110 percent rated speed
C. All other safety related pumps	API 610 or better
D. All electrical motors	NEMA Standard MG1-12-05
E. Containment fan coolers	Fan bearing housing vibration double amplitude is limited to ≤ 0.002 in.
F. All other HVAC equipment	ASHRAE Systems handbook