NORTHERN STATES POWER COMPANY

Prairie Island Nuclear Generating Plant
Units 1 & 2

USNRC USI A-46 RESOLUTION SEISMIC EVALUATION REPORT

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Stevenson & Associates
10 State Street - Suite 4
Woburn, MA 01801

List of Acronyms

CB	Control Building
CEA	Concrete Expansion Anchor
CTFR	Cable Tray Fill Report
EPRI	Electric Power Research Institute
GERS	Generic Equipment Ruggedness Spectra
GIP	Generic Implementation Procedure for the Seismic Verification of Nuclear Plant Equipment
GL	Generic Letter
GRS	Ground Response Spectrum
IAEA	International Atomic Energy Agency
IPEEE	Individual Plant Examination for External Events
ISRS	In-structure Response Spectra
PINGP	Prairie Island Nuclear Generating Plant
LAR	Limited Analytical Review
MCC	Motor Control Center
OSVS	Outlier Seismic Verification Sheet
PAB	Primary Auxiliary Building
PASS	Plant Area Summary Sheet
PSD	Power Spectral Density
RWST	Refueling Water Storage Tank
S&A	Stevenson & Associates
SBO/ESU	Station Blackout/Electrical Safeguards Upgrade
SCE	Seismic Capability Engineer
SEWS	Screening Evaluation Work Sheet
SQUG	Seismic Qualification Utility Group
SRT	Seismic Review Team
SSE	Safe Shutdown Earthquake
SSEL	Safe Shutdown Equipment List
SSER	Supplemental Safety Evaluation Report
SVDS	Screening Verification Data Sheet
USI	Unresolved Safety Issue
NRC	Nuclear Regulatory Commission
NSP	Northern States Power Company
ZPA	Zero Period Acceleration

1. Introduction and Seismic Verification Methodology

1.1 Introduction

This report provides the final documentation of the seismic adequacy evaluations performed at Northern States Power Company's (NSP's) Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, for the resolution of Unresolved Safety Issue (USI) A-46, "Seismic Qualification of Equipment in Operating Plants". USI A-46 was issued by the United States Nuclear Regulatory Commission (NRC) in December, 1980 to address the concern with the seismic adequacy of mechanical and electrical equipment in older nuclear power plants. This report describes the methodology used for and the results of the seismic reviews of active mechanical and electrical equipment, selected tanks and heat exchangers, and cable and conduit raceways.

1.2 Seismic Verification Methodology

Utilities affected by USI A-46 formed the Seismic Qualification Utility Group (SQUG) in 1982 to develop a consistent industry approach for resolving USI A-46. SQUG utilities, including NSP, with the technical and financial assistance of the Electric Power Research Institute (EPRI) conducted research and studies regarding this issue in order to formulate a thorough and reasoned program to resolve the identified concern. In February, 1987, the NRC issued Generic Letter 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46," requesting USI A-46 licensees to commit to a detailed approach for resolving USI A-46 [1.].

Subsequently, further research conducted by SQUG (and its contractors) and reviewed by the NRC staff resulted in a detailed procedure developed by SQUG called the "Generic Implementation Procedure (GIP) for Seismic Verification of Nuclear Plant Equipment" [2.]. Specifically, the NRC staff reviewed Revision 2 of the GIP and accepted (with provisos) the approach in *Supplement No. 1 to Generic Letter (GL) 87-02 that Transmits Supplemental Evaluation Report No. 2 (SSER #2) on SQUG Generic Implementation Procedure, Revision 2 as Corrected on February 14, 1992 (GIP-2)* [3.]. This GIP version and the clarifications, guidance and additional requirements provided by the NRC in SSER #2 are the basis for the seismic evaluation of mechanical and electrical equipment at Prairie Island for resolution of USI A-46. The GIP Revision 2 referred to as GIP-2 by the NRC is referred to as the GIP in this report.

Separate, but related issues pertaining to methods of analysis for above-ground flexible tanks identified in USI A-40, "Seismic Design Criteria" [4.], and seismic adequacy of proximity items above and around important-to-safety equipment identified in USI A-17 [5.] are explicitly addressed and resolved by implementation of the GIP.

The GIP approach relies on developing a safe shutdown equipment list (SSEL) which identifies equipment needed to achieve and maintain safe hot shutdown conditions as defined by a nuclear power plant's Technical Specifications. This equipment is then seismically reviewed in accordance with the GIP methodology. By means of plant walkdowns to specifically observe and evaluate each equipment item on the SSEL, an assessment can be made concerning its seismic adequacy. By evaluating seismic demand criteria, selected caveats to ensure similarity to the GIP equipment classes, an anchorage evaluation, and a seismic interaction proximity assessment, the trained walkdown engineer can be satisfied that the equipment will survive the plant's design basis seismic event. The basis for this approach is rooted in detailed observations of representative, if not identical, equipment in industrial facilities that have survived earthquakes of similar or greater magnitude in California and throughout seismically active regions around the world. Each equipment assessment is documented

on a Screening Evaluation Work Sheet (SEWS). Any deficiencies are documented on an Outlier Seismic Verification Sheet(s) (OSVS).

1.3 Seismic Qualification for Station Blackout Equipment

In addition to the GIP methodology, the project took credit for the application of current licensing requirements to a large number of SSEL components. The Prairie Island Nuclear Generating Plant Station Blackout/Electrical Safeguards Upgrade (SBO/ESU) Program Design Report, Rev. 2 [Ref. 23.]details the design and installation requirements for the SBO/ESU Project. Section 4.6 of the Prairie Island Nuclear Generating Plant Design Basis Document provides the design basis and technical description of the seismic requirements. The D5/D6 Building Seismic Response Spectra (Document No. S-376-S6-005) was used as a design criterion for the seismic design and qualification of systems and components classified as Seismic Category 1 within the D5/D6 building. The plant modification packages listed below document the conformance to these requirements.

1) 89Y973 - Class 1 Bldg for DSL Gen.
2) 89Y974 - Safeguard DSL Gen. D5/D6
3) 89Y976 - DSL Gen. Plt Interface

During the plant walkdowns, the Seismic Review Teams concentrated on spatial interaction considerations. The SRT's judged the equipment and the equipment anchorage acceptable based on the fact that it is plant design basis documentation performed under Prairie Island's Quality Assurance Program. No explicit review of this documentation was performed by the Seismic Capability Engineers beyond verifying that the documentation in fact exists and is appropriate.

1.4 Report Organization

The following section of this report discusses the development of the safe shutdown path and the resulting Safe Shutdown Equipment List (SSEL) for Prairie Island. The SSEL is provided in Reference 20.. The seismic design basis of Prairie Island and the assessment of it by the NRC are discussed in Section 3. The design basis spectra are contained in Appendix B. The Prairie Island equipment walkdown and results are provided in Section 4. These assessments resulted in summary level screening verification data sheets, SVDS, (Appendix D)

SSER #2 requires explicit documentation of any deviations from the caveats or their intent in the GIP. Section 5 provides a detailed listing of exceptions to the rules taken for any equipment item assessment. Section 6 discusses the results of the Tanks & Heat Exchangers assessment. They are also summarized under Class 21 - which is the Tanks & Heat Exchangers class - in the SVDS given in Appendix D. Cable Tray & Conduit Raceway assessments are provided in Section 7. Section 8 provides a listing of identified equipment outliers (Classes 0 - 20), with the reasons for which they are outliers.

2. Prairie Island Nuclear Generating Plant Safe Shutdown Path

Reference 20. presents the development of the safe shutdown path and equipment on the safe shutdown equipment list.

3. Prairie Island Nuclear Generating Plant Seismic Design Basis

This section describes the seismic motion used for the Prairie Island USI A-46 study. Based on the acceptance of the ground (site) design basis response spectrum and the associated amplified in-structure response spectra (ISRS), Prairie Island is using plant design basis spectra. The ISRS and the development of the spectra were presented to the NRC by NSP in response to Generic Letter 87-02 as "conservative design" spectra [6.]. The NRC reviewed the design basis ISRS and declared that they could be utilized as "conservative design" ISRS [7.]. The following sections describe the basis and development of the design basis spectra.

3.1 Description of Input Motions

The input motions used to create the seismic design of PINGP [6.] are based on the Housner Ground Response Spectrum (GRS). For the seismic analysis of the Seismic Class I structures, the Housner GRS was used. For the seismic analysis of equipment and piping, the original design developed ISRS based on a time history that was developed to envelope the design basis GRS [22.]. The PINGP Operating Basis Earthquake (OBE) is defined in the horizontal direction by the Housner GRS scaled to 0.06g peak ground acceleration (PGA) and the ISRS developed from original design time history developed to envelope the GRS. The OBE in the vertical direction is defined by 2/3 of the Housner GRS with a resulting PGA value of 0 04g. The PINGP Safe Shutdown Earthquake (SSE) is defined by multiplying the OBE acceleration by a factor of 2 resulting in a horizontal direction GRS PGA value of 0.12g.

More recently, PINGP installed the D5/D6 building. The seismic analysis of the D6/D6 building, and the seismic analysis of equipment and piping in this building, is based on a Regulatory Guide 1.60 ground spectra for 0.06g OBE and 0.12g SSE.

3.2 Description of Dynamic Modeling and Bases for the Selection of Key Modeling Parameters

The PINGP Class I structures consist of: two Reactor Buildings, an Auxiliary Building and a Turbine Building all as one interconnected structure; a Screen House; and, the D5/D6 building.

The original design dynamic analysis for the Prairie Island Nuclear Generating Plant modeled the single interconnected structure in a composite model with individual mass points assembled for the following plant structures:

1. Unit 1 Shield Building, Unit 2 Shield Building
2. Unit 1 Containment Vessel, Unit 2 Containment Vessel
3. Unit 1 Reactor Support Structure, Unit 2 Reactor Support Structure
4. Spent Fuel Tank
5. Auxiliary Building Steel Roof
6. Auxiliary Building Concrete Slabs and Walls
7. Turbine Building
8. Turbine Support

The original design also developed a dynamic model of the Screen House structure. Subsequent to the original design, PINGP installed the D5/D6 building designed to a Regulatory Guide 1.60 GRS.

The mathematical models of the above Seismic Class 1 structures were constructed in terms of lumped masses and stiffness coefficients. The damping used is as shown in Table 3-1 shown below:

Table 3-1 Prairie Island Design Basis Damping Values

Structural/Component Type	Damping
Reactor Building Containment Vessel	1.0%
Reactor Building Shield Structure	2.0%
Reactor Building Internal Concrete Construction	5.0%
Steel Frame Structures	2.0%
Reinforced Concrete Construction	2.0%
Piping Systems	0.5%
Mechanical Equipment	2.0%

3.3 Description of Soil-Structure Interaction Studies

The soil-structural interaction under seismic motions is represented by the translational and rotational springs in the model. The stiffness of these springs was determined by using equations developed for the case of a rigid plate on a semi-infinite elastic half-space.

3.4 In-Structure Response Spectra

The horizontal response spectra curves for equipment inside the buildings were generated by the time history technique of seismic analysis [8.]. The input (base motion) time history used developed to envelope the design basis OBE ground response spectra. The amplified time histories were then developed for each building elevation in the lumped mass building model. From these amplified time histories of acceleration, acceleration floor response spectra were developed for various damping values. The floor spectra developed represent the Operating Basis Earthquake (OBE) level input acceleration for equipment and equipment anchorage design. The spectra accelerations were increased by a factor of 2.0 to represent the Safe Shutdown Earthquake (SSE). Originally, the response spectra curves were smoothed and broadened to eliminate erratic response and to account for parameter uncertainties such as building and soil properties. In general, the structural analysis showed the response to be similar in the North-South and East-West directions; therefore, horizontal in-structure response spectra were generated for one horizontal direction only and are considered applicable to both horizontal directions. Separate North-South and East-West spectra were developed for the Turbine Support and the Auxiliary Building Steel Roof, however, no SSEL equipment required the use of spectra at either of these locations.

The vertical in-structure response acceleration is defined by 2/3 of the Housner GRS PGA (OBE - 0.04g, SSE - 0.08g). The PINGP structures, systems and components are considered rigid in the vertical direction. Therefore 2/3 of the Housner GRS PGA acceleration is used regardless of location.

The project created ISRS curves for 3, 4, and 5% or critical damping based on the original design results published for 0.5 and 1%.

Seismic capacity, as described in the GIP by the "Bounding Spectrum" and the "Generic Equipment Ruggedness Spectra" (GERS), are presented in a frequency vs. acceleration format. Therefore, in order to facilitate the comparison of seismic demand to capacity, NSP consolidated all of the response spectra into a single format of frequency vs. acceleration [8.]. Appendix B contains the 5% damped floor response spectra for the Seismic Class I structures.

The NRC staff reviewed the original and subsequent modeling performed by NSP and its contractors and determined that the building modeling was adequate. The NRC staff concluded that the resulting in-structure response spectra could be utilized as conservative design ISRS spectra as defined in the GIP [2.] as opposed to realistic, median centered ISRS [7.].

The SSE site ground response spectrum and the generated ISRS are provided in Appendix B.

4. Results of Screening Verification and Walkdown - Equipment Classes 0 Through 20

The purpose of this section is to describe the Screening Verification and Walkdown performed to verify the seismic adequacy of active mechanical and electrical equipment identified in the Prairie Island Safe Shutdown Equipment List (SSEL) report [20.]. The guidelines contained in this section were used to screen the equipment for seismic adequacy. If the equipment did not pass this screen, it was declared an outlier (see Section 8). Outlier Resolution, described in Section 9, is accomplished by

1) more refined or sophisticated methods for verifying seismic adequacy, or
2) equipment/anchorage modification.

4.1 Seismic Evaluation Guidelines

The procedure for performing the Screening Verification and Walkdown is based on the following four seismic screening guidelines, as defined in the GIP [2.]:

1. Seismic Capacity Compared to Seismic Demand - The seismic capacity of the equipment, based on earthquake experience data, generic seismic testing data, or equipment-specific seismic qualification data, should be greater than the seismic demand imposed on the equipment by the safe shutdown earthquake (SSE).

2. Caveats - In order to use the seismic capacity defined by the earthquake experience Bounding Spectrum or the generic seismic testing GERS, the equipment should be similar to the equipment in the earthquake experience equipment class or the generic seismic testing equipment class and also meet the intent of the specific caveats for that class of equipment. If equipment-specific seismic qualification data is used, then any specific restrictions or caveats for that qualification data apply instead.

3. Anchorage - The equipment anchorage capacity, installation, and stiffness should be adequate to withstand the seismic demand from the SSE at the equipment location.

4. Seismic Interaction - The effect of possible seismic spatial interactions with nearby equipment, systems, and structures should not cause the equipment to fail to perform its intended safe shutdown function.

The evaluation of equipment against each of these four screening guidelines at Prairie Island is based upon walkdown evaluations, calculations, and other supporting data.

4.1.1 Seismic Capacity Vs. Demand

Prairie Island determined the seismic capacity of safe shutdown equipment using:

- Earthquake experience data with capacity defined by the Bounding Spectrum, or Reference Spectrum depending of the demand spectrum used;
- Generic seismic test data which have been compiled into Generic Equipment Ruggedness Spectra (GERS); or,
- Equipment-specific seismic qualification data.

The seismic demand imposed on an item of equipment depends on whether or not the ground response spectrum or amplified in-structure response spectra were used, and how it is compared to the capacity data.

Generally, the ground spectrum was compared to the bounding spectrum for equipment within 40' of grade with an estimated fundamental frequency greater than 8 Hz. To a lesser extent, conservative ISRS were compared to 1.5 times the bounding spectrum (i.e., reference spectrum). The GERS were not used in the capacity vs. demand comparisons. Finally, newer, upgraded equipment that had been seismically qualified in accordance with the IEEE 344 Standard, 1975 Edition or later, was accepted based on this testing documentation and anchorage design calculations, and was supplemented only by a seismic interaction review by the SRT.

For purposes of determining the *40' Above Grade* elevation, effective grade for the site and/or each building must be determined. "Effective grade" at a nuclear plant is defined as the average elevation of the ground surrounding the building along its perimeter. As Prairie Island is a soil site, effective grade was established at El. 695.0 ft.

4.1.2 Caveat Compliance

The second screening guideline which must be satisfied to verify the seismic adequacy of an item of mechanical or electrical equipment is to confirm that (1) the equipment characteristics are generally similar to the earthquake experience equipment class or the generic seismic testing equipment class and (2) the equipment meets the intent of the specific caveats for the equipment class. This review is only necessary when the Bounding Spectrum or the GERS is used to represent the seismic capacity of an item of equipment. If equipment-specific seismic qualification data is used instead, then only the specific restrictions applicable to that equipment-specific qualification data need be applied.

Another aspect of verifying the seismic adequacy of equipment included within the scope of this procedure is explained by the "rule of the box." For the equipment included in either the earthquake or testing equipment class, all of the components mounted on or in this equipment are considered to be part of that equipment and do not have to be evaluated separately. However, the walkdown engineers did look for suspicious details or uncommon situations which could make the equipment item vulnerable.

An item of equipment should have the same general characteristics as the equipment in the earthquake experience equipment class or the generic seismic testing equipment class. The intent of

this rule is to preclude items of equipment with unusual designs and characteristics which have not demonstrated seismic adequacy in earthquakes or tests.

"Caveats" are defined as the set of inclusion and exclusion rules which represent specific characteristics and features particularly important for seismic adequacy of a particular class of equipment. Appendix B of the GIP contains a summary of the caveats for the earthquake experience equipment class and for the generic seismic testing equipment class.

The "intent" of the caveats should be met when evaluating an item of equipment as they are not fixed, inflexible rules. Engineering judgment is used to determine whether the specific seismic concern addressed by the caveat is met. Each item of equipment should be evaluated to determine whether it meets the specific wording of the applicable caveats and their intent. However, if an item of equipment meets the intent of the caveats, but the specific wording of the caveat rule is not met, then that item is considered to have met the caveat. At Prairie Island, a small number of SSEL items were judged to meet the intent, but not the exact wording of a caveat, and these cases are reported in Section 5 of this report.

4.1.3 Anchorage Adequacy

Prairie Island verified anchorage adequacy with an approach incorporating three elements:

- Comparison of the anchorage capacity with the seismic demand.
- Evaluation of the anchorage to verify that it is free of gross installation defects.
- Evaluation of the equipment anchorage load path to verify that there is adequate stiffness and strength.

The screening approach for verifying the seismic adequacy of equipment anchorage is based upon a combination of inspections, analyses, and engineering judgment. Inspections consist of measurements and visual evaluations of the equipment and its anchorage, supplemented by use of plant documentation and drawings. Analyses compare the anchorage capacity to the seismic loadings (demand) imposed upon the anchorage. These analyses were done using the guidelines in Section 4 and Appendix C of the GIP. Engineering judgment is also an important element in the evaluation of equipment anchorage. As a general rule, all significantly sized equipment was rigorously analyzed using the ANCHOR software package developed by Stevenson & Associates [19.], or by manual calculation. Small equipment, weighing usually 50 lbs. or less was accepted by judgment and a "tug test". The tug test simply involves pulling on the device (say, a wall-mounted transmitter) with a force to exceed 3 times the expected seismic demand for the equipment location. This demonstrates, as a minimum, a factor of safety of 3 for the equipment anchorage, consistent with the anchorage evaluation criteria in the GIP.

The four main steps used to evaluate seismic adequacy of equipment anchorages at Prairie Island followed the guidance of the GIP and are shown below:

1. Anchorage Installation Inspection
2. Anchorage Capacity Determination
3. Seismic Demand Determination
4. Comparison of Capacity to Demand

The first main step in evaluating the seismic adequacy of anchorages is to check the anchorage installation and its connection to the base of the equipment. This inspection consists of visual checks and measurements along with a review of plant documentation and drawings where necessary, and an anchor bolt tightness and embedment check for anchorage utilizing concrete expansion anchors.

All accessible anchorages were visually inspected. A check of the following equipment anchorage attributes was made:

1. Equipment characteristics
2. Type of Anchorage
3. Size and Location of Anchorage
4. Installation Adequacy
5. Embedment Length
6. Gap at Threaded Anchors
7. Spacing Between Anchorages
8. Edge Distance
9. Concrete Strength and Condition
10. Concrete Crack Locations and Sizes
11. Essential Relays in Cabinets
12. Equipment Base Stiffness/Prying Action
13. Equipment Base Strength/Structural Load Path
14. Embedment Steel and Pads

For expansion anchors, a tightness check was performed to detect gross installation defects (such as oversized concrete holes, total lack of preload, loose nuts, damaged subsurface concrete, and missing plug for shell types) which would leave the anchor loose in the hole. The tightness check for expansion anchors was accomplished by applying a torque to the anchor by hand until the anchor was "wrench tight," i.e., tightened without excessive exertion. If the anchor bolt or nut rotates less than about 1/4 turn, then the anchor is considered tight. The tightness check was performed on all accessible expansion anchors for floor mounted equipment where the anchorage adequacy is performed by analysis rather than "tug test" as described above. Wall mounted equipment was excluded as allowed by the GIP because the anchors experience some tensile loading due to gravity. A random ("spot") embedment check on selected shell type anchors was performed, inspecting them to ensure that the shell anchor and equipment base are not in contact so as to invalidate the results of the tightness check. Based on the embedment checks and plant documentation, the predominant expansion anchor type at Prairie Island for original equipment is the Phillips *Red Head* shell anchor which requires no knock-down factor for anchor type. Newer equipment installed since the plant began operation typically utilizes Hilti wedge anchors which also require no knock-down factor.

The second main step in evaluating the seismic adequacy of anchorages is to determine the allowable capacity of anchors used to secure an item of equipment. The allowable capacity is obtained by multiplying the nominal allowable capacities by the applicable capacity reduction factors. The nominal capacities and reduction factors are obtained from Appendix C of the GIP, based on the results of the anchorage installation inspection checks. The nominal allowable tensile and shear capacities are established in EPRI Report NP-5228-SL [15.]. The nominal allowable capacities incorporate a design safety factor of 3 between the ultimate and allowable (working) capacities.

The pullout capacity allowable is based on the product of the nominal pullout capacity and the applicable capacity reduction factors based on identifying the appropriate anchor type and make:

$$P_{all} = P_{nom}\ RT_p\ RL_p\ RS_p\ RE_p\ RF_p\ RC_p\ RR_p$$

Where: P_{all} = Allowable Pullout capacity of installed anchor (kip)
P_{nom}= Nominal allowable Pullout capacity (kip)
RT_p= Reduction factor for the Type of expansion anchors
RL_p= Reduction factor for short embedment Lengths
RS_p= Reduction factor for closely Spaced anchors
RE_p= Reduction factor for near Edge anchors
RF_p= Reduction factor for low strength (f'_c) concrete
RC_p= Reduction factor for Cracked concrete
RR_p= Reduction factor for expansion anchors securing equipment with essential Relays

The shear capacity allowable is based on the product of the nominal shear capacity and the applicable capacity reduction factors:

$$V_{all} = V_{nom}\ RT_s\ RL_s\ RS_s\ RE_s\ RF_s\ RR_s$$

Where: V_{all} = Allowable shear capacity of installed anchor (kip)
V_{nom}= Nominal allowable shear capacity (kip)
RT_s= Reduction factor for the Type of expansion anchors
RL_s= Reduction factor for short embedment Lengths
RS_s= Reduction factor for closely Spaced anchors
RE_s= Reduction factor for near Edge anchors
RF_s= Reduction factor for low strength (f'_c) concrete
RR_s= Reduction factor for expansion anchors securing equipment with essential Relays

Note that the pullout and shear capacities for anchors given above are based on having adequate stiffness in the base of the equipment and on not applying significant prying action to the anchor. If Check 12, Base Stiffness and Prying Action, from Part II, Chapter 4 of the GIP shows that stiffness is not adequate or that significant prying action is applied to the anchors, then the Seismic Capability Engineers lowered the allowable capacity loads accordingly, normally by completely discounting the affected bolt.

The third step in evaluating the anchorages is to determine the seismic demand imposed on the equipment. The demand load is established based on the type of demand spectrum used. If the amplified ISRS are used, no additional factors of conservatism are used to establish the demand load since the ISRS are deemed "conservative design" by review of the NRC. The demand load is the product of the appropriate spectral acceleration value times the weight of the equipment item. Table C.1-1 of the GIP is used, in general, to establish the fundamental frequency and equipment damping for the given classes of equipment. If the SRT deems an item as rigid, the zero period acceleration (ZPA) is used. If the item is deemed flexible, the peak of the response spectrum is used. If the fundamental frequency is given in the SEWS, then the largest spectral acceleration in the range from that estimated frequency to the ZPA is used. If the ground spectrum is used for demand, then 1.875 times the appropriate spectral acceleration is used where 1.875 is the product of 1.5, the median amplification factor, and 1.25, the additional anchorage factor of conservatism for non-conservative demand spectra.

The fourth and final step to complete the evaluation determines the seismic demand on the equipment anchorage and compares the seismic demand to the anchorage capacity. The demand on the anchorage is calculated by applying the demand load at the equipment center of gravity. If the demand is less than the capacity, the anchorage is acceptable; otherwise, the equipment item is declared an outlier.

4.1.4 Seismic Interaction Checks

The fourth and final screening guideline used to verify the seismic adequacy of an item of mechanical or electrical equipment was to confirm that there were no adverse seismic spatial interactions with nearby equipment, systems, and structures which could cause the equipment to fail to perform its intended safe shutdown function. The interactions of concern are (1) proximity effects, (2) structural failure and falling, and (3) flexibility of attached lines and cables. Guidelines for judging interaction effects when verifying the seismic adequacy of equipment are presented in Appendix D of the GIP.

During the plant walkdowns at Prairie Island, the SRT's identified only one general interaction concern concerning open "S" type hooks used to support overhead lighting. This particular issue and its resolution is discussed in detail in Section 8.

Overhead piping systems and ductwork were closely examined in all plant areas containing A-46 equipment. The SRT's identified no vulnerabilities and noted that the systems were well supported.

4.2 Outlier Resolution

An outlier is defined as an item of equipment which does not meet the screening guidelines noted above. An outlier may be shown to be adequate for seismic loadings by performing additional evaluations such as the seismic qualification techniques currently being used in newer nuclear power plants. At the discretion of the Seismic Capacity Engineers, additional evaluations and alternate methods were documented on the OSVS forms.

4.3 Seismic Capability Engineers and Peer Reviewer

The guidelines described in this section were applied by Seismic Capability Engineers as defined in Section 2 of the GIP. These engineers exercised engineering judgment based upon an understanding of the guidelines given in this document, the basis for these guidelines given in the reference documents and presented in the SQUG training course, and their own seismic engineering experience.

The station walkdowns were conducted in several sessions beginning in November 1993 and ending in November 1995. The seismic capability engineers for the Prairie Island walkdown were Messrs. W. Djordjevic and Frank B. Stille of S&A; Messrs. Mark McKeown and Gerald Gore of Northern States Power Company, and Mr. Gregory Ridder of Wisconsin Public Service Company. All have been SQUG trained and certified. Their resumes and/or SQUG Walkdown Course Completion Certificates are provided in Appendix C.

An independent evaluation and peer review of the walkdown process was performed by Dr. Robert P. Kennedy. As required by the GIP, the review included an assessment of the walkdown and analyses by audit and sampling to identify any gross errors. Dr. Kennedy personally conducted one day of

walkdowns on July 25, 1994 to ascertain completeness and correctness of the A-46 walkdown. Dr. Kennedy also reviewed Screening Evaluation Work Sheets documenting the seismic verification conclusions by SRTs on selected components. Dr. Kennedy concluded that the walkdowns were being conducted competently and the findings made were appropriate. Appendix A provides documentation of Dr. Kennedy's peer review.

4.4 Other Types of Seismic Evaluations and Interfaces

In addition to the seismic evaluations covered in this section for active mechanical and electrical equipment, seismic evaluations for two other types of equipment are covered in other sections as follows:

- Section 6 - Tanks and Heat Exchangers Review
- Section 7 - Cable and Conduit Raceways Review

A separate Relay Evaluation Report [Ref. 20.]documents the results of the relay functionality review required in Section 6 of the GIP.

While these other seismic evaluations can generally be performed independently from those for active mechanical and electrical equipment, there are a few areas where an interface with the Relay Functionality Review is appropriate:

- Any cabinets containing essential relays, as determined by the relay review, should be evaluated for seismic adequacy using the guidelines contained in this section.
- A capacity reduction factor should be applied to expansion anchor bolts which secure cabinets containing essential relays. The capacity reduction factor is discussed in Section 4.4 and Appendix C of the GIP.
- Seismic interaction, including even mild bumping, is not allowed on cabinets containing essential relays. This limitation is discussed in Section 4.5 of the GIP.
- In-cabinet amplification factors for cabinets containing essential relays may be estimated, using the guidelines in Section 6 of the GIP, by the Seismic Capability Engineers for use in the Relay Functionality Review.

4.5 Documentation

Prairie Island documented the results of the Screening Verification and Walkdown on Screening Verification Data Sheets (SVDS) in Appendix D and Screening Evaluation Work Sheets (SEWS).

As discussed in Section 4.4, the discussion of the review and the description of outliers for Heat Exchangers & Tanks and Cable Tray & Conduit Raceways are given in Sections 6 and 7, respectively. The SEWS also contain the SEWS for Class 21 equipment, Heat Exchangers and Tanks, and Plant Area Summary Sheets (PASS) for the Cable Tray & Conduit Raceway Reviews.

Outliers for all equipment in Classes 0 - 20 are discussed in Section 8. The Relay Functionality Assessment is given in a separately bound report entitled, "USNRC USI A-46 Resolution, SSEL and Relay Evaluation Report" [20.].

4.6 Evaluation Results - Equipment Classes 0 Through 20

The seismic review SSEL list contains 621 equipment items excluding: 1) items classified as Rule-of-the-Box; 2) tanks & heat exchangers; and, 3) electrical raceways. Of this population, 82 items were declared outliers. For a discussion of equipment outliers (Class 0 - 20) see Section 8.

5. GIP Deviations and Commentary on Meeting The Intent of Caveats

No significant or programmatic deviations from the GIP were made while performing the walkdowns and seismic adequacy evaluations at Prairie Island for resolution of USI A-46. Very few *interpretations* were made with respect to the *wording* of the GIP caveats versus the caveat's intent. This section lists those interpretations or measures taken to meet the intent of the caveat in Table 5.1 below. All other equipment not listed in this table met the caveat rules as stated in the GIP.

Table 5-1 Commentary Regarding GIP Deviations

Equipment ID and Description	Commentary
Misc. small relief valves: 2AF-29-1, 2AF-29-2, 2CL-25-1, 2CL-57-3, 2CL-57-4, 2CL-57-5, 2CL-57-6, 2VC-28-1, 2VC-28-2, AF-29-1, AF-29-2, CL-25-1, CL-57-3, CL-57-4, CL-57-5, CL-57-6, SA-54-3, SA-54-6, SA-56-1, SA-56-3, VC-28-1, VC-28-2, ZH-16-1, ZH-16-2	These small relief valves are mounted on a 3/4" inlet which is less than the 1" diameter required by Bounding Spectrum Caveats 4 and 5 for Class 7, Fluid Operated Valves. The valves are all small (12" or less), relatively lightweight, and judged seismically rugged by the Seismic Review Team.
D1 and D2 Diesel Generator Cooling Water Supply Control Valves: CV-31505 & CV-31506	These cast iron body valves have both inlet and outlet flanges ruggedly mounted directly to the diesel generator skid. The Seismic Review Team judged that the piping loads applied to the valve would be low meeting the intent of Bounding Spectrum Caveat 2 for Class 7.
Small Solenoid Valves: SV-33242 SV-33245, SV-33498, & SV-33987	These small brass solenoid valves are mounted on copper tubing.(< 1"). Both the valve and tubing are hardmounted together, judged by the Seismic Review Team to meet the intent of Bounding Spectrum Caveats 4 & 5 for Class 7.
Small Solenoid Valves: SV-37022, SV-37025, & SV-37460 through SV-37467	These small solenoid valves are mounted on small piping and tubing.(< 1"). The Seismic Review Team accepted the seismic ruggedness of these valves by a tug test, meeting the intent of Bounding Spectrum Caveats 4 & 5 for Class 8.
Motor Operated Valves: MV-32060 through MV-32063	The weight of these valves exceeds the limits of GIP Figure B.8-1 for 4" pipe. The product of operator weight times valve offset meets the 30% extrapolation provisions in GIP Rev. 2A for the, thus meeting the intent of Bounding Spectrum Caveat 5 for Class 8.
Cooling Water to Safeguards Traveling Screens Solenoid Valves: SV-33133 & SV-33134	The Seismic Review Team judged that the piping loads applied to these valves with cast iron bodies would be low meeting the intent of Bounding Spectrum Caveat 2 for Class 8.
Racks and Panels: 1B1, 1B2, 1NR3, 1NR4, 1PLP, 1R1, 1R2, 1RCS1, 1RCS2, 2B1, 2B2, 2NR3, 2NR4, 2PLP, 2R1, 2R2, 2RCS1, 2RCS2	These racks and panels are all mounted by 5/8" cast in place J-bolts that do not meet the 16D embedment requirement. The anchorage analysis assumed only 1/2" bolts thereby satisfying the embedment requirement, and meeting the intent of Bounding Spectrum Caveat 9 for Class 20.

Table 5-1 Commentary Regarding GIP Deviations (Continued)

Equipment ID and Description	Commentary
Relay Racks: 1AMR1, 2AMR1, 1ASG1, 1ASG2, 1BSG1, 1BSG2, 2BSG1, 2BSG2, 55800, 55300	Various anchors are propped up on shims filling gaps up to 1" below cabinet bases, due to pitched floor leading to drains. The shims meet the intent of Anchorage Caveat 6 for zero gaps under equipment containing essential relays. The analysis of the anchorage used the methodology of EPRI TR-103960 [Ref. 24.]considering flexural stress resulting from the bolt projections thereby meeting the intent of caveat.
Motor Control Centers: MCC 1L1, MCC 1L2, MCC 1X1, MCC 1X2, MCC 2L1, MCC 2L2, MCC 2X1, MCC 2X2	These Motor Control Centers use an anchorage detail that uses pairs of cast in place studs anchoring the front and rear of the MCC bay. At the headed end, the studs are joined by an embeded steel plate. Taken alone, the studs would not meet the minimum embedment requirement. An analysis of the combined stud and plate embedment satisfies the anchorage demands meeting the intent of Anchorage Caveat 5.
Charging Pumps: 145-041, 145-042, 245-041, 245-042	These pumps are all anchored by eight 1-1/8" J-bolts. The edge distance falls below the 4D minimum for this size bolt. An anchorage analysis treating the bolts as 3/4" satisfied the anchorage requirements thus meeting the intent of Anchorage Caveat 8.
Auxiliary Feedwater Pumps: 145-201, 145-331, 245-201 245-331	These pumps are all anchored by 3/4" J-bolts. The embedment length falls below the 16D minimum for this size bolt. An anchorage analysis treating the bolts as 1/2" satisfied the anchorage requirements thus meeting the intent of Anchorage Caveat 8.
Main Control Panels: A, B-1, B-2, C-1. C-2, E-1, E-2, F-1, F-2, G-1	The main control panels are all anchored by 5/8" J-bolts. The embedded length falls below the 16D minimum for this size bolt. An anchorage analysis treating the bolts as 1/2" satisfied the anchorage requirements thus meeting the intent of Anchorage Caveat 8.

6. Results of the Tanks and Heat Exchanger Review

Tanks and heat exchangers were evaluated in accordance with the rules and procedures given in Section 7 of the GIP [2.].

This section gives the results of the tank and heat exchanger reviews performed. In total, 62 tanks and heat exchangers were evaluated, of which 10 were declared outliers.

6.1 Evaluation methodology

The screening evaluations described in this section for verifying the seismic adequacy of tanks and heat exchangers cover those features of tanks and heat exchangers which experience has shown can be vulnerable to seismic loadings. These evaluations include the following features:

- Check that the shell of large, flat-bottom, vertical tanks will not buckle. Loadings on these types of tanks include the effects of hydrodynamic loadings and tank wall flexibility.

- Check that the anchor bolts and their embedments have adequate strength against breakage and pullout.

- Check that the anchorage connection between the anchor bolts and the tank shell (e.g., saddles, legs, chairs, etc.) have adequate strength.

- Check that the attached piping has adequate flexibility to accommodate the motion of large, flat-bottom, vertical tanks.

The Seismic Capability Engineers, Messrs. W. Djordjevic, G. Ridder, F. Stille, M. McKeown and G. Gore, reviewed these evaluations to verify that they meet the intent of these guidelines. This review included a field inspection of the tank, the anchorage connections, and the anchor bolt installation against the guidelines described in this Section 7, Section 4.4, and Appendix C of the GIP [2.].

The derivation and technical justification for the guidelines utilized were developed specifically for:

(1) large, flat-bottom, cylindrical, vertical, storage tanks; and
(2) horizontal cylindrical tanks and heat exchangers with support saddles made of plates.

The types of loadings and analysis methods described in this section are considered to be appropriate for these types of tanks and heat exchangers; however, a generic procedure cannot cover all the possible design variations. Other design features such as wall mounted heat exchangers, heat exchangers and vertical tanks supported on legs not covered by the GIP were evaluated using the same procedures and loading conditions as given in Section 7 of the GIP.

Other types of tanks and heat exchangers (e.g., vertical tanks supported on skirts and structural legs) which were not specifically covered by the guidelines in Section 7 of the GIP were evaluated by the Seismic Capability Engineers using an approach similar to that described in Section 7 of the GIP.

The other types of tanks covered by the screening guidelines in Section 7 of the GIP are cylindrical steel tanks and heat exchangers whose axes of symmetry are horizontal and are supported on their

curved bottom by steel saddle plates. The screening guidelines are based on the assumption that the horizontal tanks are anchored to a stiff foundation, which has adequate strength to resist the seismic loads applied to the tank. All the base plates under the saddles are assumed to have slotted anchor bolt holes in the longitudinal direction to permit thermal growth of the tank, except for the saddle at one end of the tank which is fixed. The saddles are assumed to be uniformly spaced a distance S apart, with the two ends of the tank overhanging the end saddles a maximum distance of S/2.

A simple, equivalent static method is used to determine the seismic demand on and capacity of the anchorages and the supports for horizontal tanks. The screening guidelines contained in Section 7 of the GIP specifically addressed only the seismic loads due to the inertial response of horizontal tanks. If, during the Screening Verification and Walkdown of a tank, the Seismic Capability Engineers determined that the imposed nozzle loads due to the seismic response of attached piping may be significant, then these loads were included in the seismic demand applied to the anchorage and supports of the tank. The nozzle loads were obtained from existing NSP piping analysis.

The Refueling Water Storage Tank (RWST)

The PINGP Refueling Water Storage Tank is integral part of Auxiliary Bldg. The Tank was constructed in place with the Auxiliary Building. First the steel liner was errected with external rings for embedment and large anchor bolts into the floor. The Tank was then filled with water and 2' to 1-6" concrete was poured around the entire steel tank. the Tank bottom elevation is 695' and the top elevation is 751'. There are integral floor joints at the 715', 735' and 755' elevations. The Seismic Review Team verifitd the RWST to same design basis value as the safety-related buildings.

6.2 Summary of Evaluation Results

The results of the A-46 evaluations are summarized below. Table 6-1 lists the original design Tanks and Heat Exchangers analyzed to GIP Section 7 rules. Table 6-2 lists the Tanks and Heat Exchangers installed under the SBO modification to current licensing requirements.

Table 6-1 Tank & Heat Exchanger Evaluation Results, GIP Sec. 7 Evaluations

ID	Description	Type	Results
053-201	121 D1 DIESEL GENERATOR FUEL OIL DAY TANK	Vertical Tank (On legs)	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
053-202	122 D2 DIESEL GENERATOR FUEL OIL DAY TANK	Vertical Tank (On legs)	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
053-221	121 DIESEL GENERATOR OIL STORAGE TANK	Buried Tank	Outlier. The flexibility of buried piping could not be determined from available documentation
053-223	123 DIESEL GENERATOR OIL STORAGE TANK	Buried Tank	Outlier. The flexibility of buried piping could not be determined from available documentation
053-251	121 COOLING WATER PUMP DIESEL STORAGE TANK	Buried Tank	Outlier. The flexibility of buried piping could not be determined from available documentation
053-252	122 COOLING WATER PUMP DIESEL STORAGE TANK	Buried Tank	Outlier. The flexibility of buried piping could not be determined from available documentation
053-321	12 COOLING WATER PUMP DIESEL OIL DAY TANK	Vertical Tank (On legs)	OK - Meets Design Basis in Accordance with GIP Section 7 Rules

Table 6-1 Tank & Heat Exchanger Evaluation Results, GIP Sec. 7 Evaluations (Continued)

ID	Description	Type	Results
053-322	22 COOLING WATER PUMP DIESEL OIL DAY TANK	Vertical Tank (On legs)	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
053-381	121 CONTROL ROOM CHILLED WATER EXPANSION TANK	Vertical Tank (On skirt)	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
053-382	122 CONTROL ROOM CHILLED WATER EXPANSION TANK	Vertical Tank (On skirt)	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
053-481	121 D1 DIESEL GENERATOR EXPANSION TANK	Wall Mounted Tank	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
053-482	122 D2 DIESEL GENERATOR EXPANSION TANK	Wall Mounted Tank	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
135-021	11 RCP SEAL WATER RETURN HEAT EXCHANGER	Vertical Tank	Outlier - The stress in the supports exceed GIP allowables
135-101	12 CL PUMP DIESEL JACKET CLG HX	Horizontal Heat Exchanger	Outlier - This heat exchanger is an outlier because it is not secured to the pedestals (mounting cradles are secured to the pedestals but heat exchanger is not attached to the cradles). Further both cradles have slotted mounting holes which further makes this component an outlier.
135-111	REGEN HT EX	Horizontal heat exchangers mounted on wall	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
153-011	11 PRESSURIZER RELIEF TANK	Horizontal Tank	Outlier - The tank is an outlier due to the slotting of holes in both support plates
153-021	11 VOLUME CONTROL TANK	Vertical Tank (On legs)	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
153-081	RFLG WTR STG TK	Vertical Flat Bottom Tank	OK - Meets Design Basis in Accordance with GIP Section 7 Rules. Refer to discussion of the RWST in the preceding section.
235-081	22 CL PUMP DIESEL JACKET CLG HX	Horizontal Heat Exchanger	Outlier - This heat exchanger is an outlier because it is not secured to the pedestals (mounting cradles are secured to the pedestals but heat exchanger is not attached to the cradles). Further both cradles have slotted mounting holes which further makes this component an outlier.
235-111	21 REGENERATIVE HEAT EXCHANGER	Horizontal heat exchangers mounted on wall	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
235-131	21 SEAL WATER HEAT EXCHANGER	Vertical Tank	Outlier - The stress in the supports exceed GIP allowables
253-011	21 PRESSURIZER RELIEF TANK	Horizontal Tank	Outlier - The tank is an outlier due to the slotting of holes in both support plates
253-021	21 VOLUME CONTROL TANK	Vertical Tank (On legs)	OK - Meets Design Basis in Accordance with GIP Section 7 Rules
253-081	21 REFUELING WATER STORAGE TANK	Vertical Flat Bottom Tank	OK - Meets Design Basis in Accordance with GIP Section 7 Rules

Table 6-2 Tanks & Heat Exchangers Installed Under SBO Modification

These tanks and heat exchangers were installed to current day requirements (See Section 1.4 of this report) and are considered seismically qualified. SRT walkdowns confirmed the absence of seismic spatial concerns for these items.

ID	Description
253-361	21 D5 FO DAY TANK
253-331	21 D5 FO STORAGE TANK
253-362	22 D6 FO DAY TANK
253-332	22 D6 FO STORAGE TANK
253-333	23 D5 FO STORAGE TANK
253-334	24 D6 FO STORAGE TANK
246-031	D5 1A START AIR RECEIVER
246-032	D5 1B START AIR RECEIVER
246-033	D5 2A START AIR RECEIVER
246-034	D5 2B START AIR RECEIVER
253-371	D5 ENG 1 FO LEAKAGE TANK
247-021	D5 ENG 1 HT CLNT PREHEATER
253-401	D5 ENG 1 HT EXPANSION TANK
262-441	D5 ENG 1 HT/LT RADIATOR
235-201	D5 ENG 1 L/O PREHEATING HEAT EXCHANGER
253-411	D5 ENG 1 LT EXPANSION TANK
253-372	D5 ENG 2 FO LEAKAGE TANK
247-022	D5 ENG 2 HT CLNT PREHEATER
253-402	D5 ENG 2 HT EXPANSION TANK
262-442	D5 ENG 2 HT/LT RADIATOR
235-202	D5 ENG 2 L/O PREHEATING HEAT EXCHANGER
253-412	D5 ENG 2 LT EXPANSION TANK
246-035	D6 1A START AIR RECEIVER
246-036	D6 1B START AIR RECEIVER
246-037	D6 2A START AIR RECEIVER
246-038	D6 2B START AIR RECEIVER
253-373	D6 ENG 1 FO LEAKAGE TANK
247-023	D6 ENG 1 HT CLNT PREHEATER
253-403	D6 ENG 1 HT EXPANSION TANK
262-443	D6 ENG 1 HT/LT RADIATOR
235-203	D6 ENG 1 L/O PREHEATING HEAT EXCHANGER
253-413	D6 ENG 1 LT EXPANSION TANK
247-024	D6 ENG 2 HT CLNT PREHEATER
253-404	D6 ENG 2 HT EXPANSION TANK
262-444	D6 ENG 2 HT/LT RADIATOR
235-204	D6 ENG 2 L/O PREHEATING HEAT EXCHANGER
253-374	D6 ENG 2 LEAKAGE TANK
253-414	D6 ENG 2 LT EXPANSION TANK

7. Results of the Cable Tray and Conduit Raceway Review

7.1 Introduction and Purpose

The seismic adequacy of electrical raceway systems has been identified as an open issue (Unresolved Safety Issue A-46) by the U. S. Nuclear Regulatory Commission (NRC) for older nuclear power plant facilities.

This section gives the results of the USI A-46 evaluation for the electrical raceways at Prairie Island. The evaluations were conducted following Section 8 of the GIP.

The seismic evaluation involves conducting a thorough plant walkdown to identify representative, "worst case" examples of raceway systems and evaluate their adequacy.

The scope of raceways reviewed is reported in Section 7.2 followed by a discussion of the specific raceway hangers (and systems) chosen for the limited analytical review in Section 7.3. Section 7.4 provides the raceway assessment criteria (caveats) and the walkdown results. Section 7.5 presents the limited analytical review results.

7.2 Scope of Electrical Raceways Assessed

This section describes the areas of the Prairie Island Nuclear Generating Plant that were assessed and the specific raceway systems chosen for evaluation. Electrical raceways are cable tray and conduit systems that are wall-mounted, floor supported and suspended systems.

7.2.1 General Areas Covered

All buildings and elevations were surveyed. The station walkdowns were conducted May 24, 1994, May 30, 1995 and July 10 - 14, 1995. Essentially all electrical raceway systems were walked down by the Seismic Capability Engineers conducting the Class of Twenty walkdowns. A list of the buildings in which the walkdowns were conducted is shown below:

1. Containment Buildings (Units 1 and 2)
2. Auxiliary Building, including the Fuel Tank Area
3. Turbine Building
4. Screenhouse
5. D5/D6 Diesel Generator Building

All rooms and areas within the buildings as listed above, were considered without exception at Prairie Island.

All areas were evaluated against the GIP Inclusions Rules and the Caveats (also known as "Other Seismic Concerns" and "Seismic Interaction"). Section 7.5 discusses the evaluation criteria at greater length.

The surveys are documented on Plant Area Summary Sheets (PASS).

7.2.2 General Description of Prairie Island Raceways

Prairie Island's raceway systems are primarily of light steel strut frame construction. The strut hangers vary from the very simple wall mounted bracket supporting a few conduits to multi-tier, three-dimensional strut frames supporting cable trays and conduits. The predominant strut hanger type at Prairie Island is the ceiling hung trapeze frame supporting cable trays and/or conduits. The largest number of tray tiers at Prairie Island were eight tier systems found in the Relay Room which is located in the Auxiliary Building.

The trays varied in size from 6" width to 30" width, primarily of 12" to 24" ladder and trough type construction. Conduits varied in size from 1/2" to 5" nominal diameter and are of rigid steel material (standard schedule pipe). Trays were sometimes sprayed with fire retardant or covered with insulation board.

The trays and conduits were secured to hangers using standard tray clamps (clips), pipe clamps, or bolting. No missing or damaged hardware was noted during the walkdowns.

The hangers are generally constructed of single and double channel member posts and double and triple channel member cross members interconnected with 4-bolt ninety degree bracket type fittings. Anchorage designs such as welding the posts directly to overhead structural steel are common although more frequently seen in the Reactor Buildings. Hangers are also anchored to channels which are embedded into (cast-in) concrete or connected to concrete slabs by base plates and expansion anchors. Hangers are sometimes bolted through connection fittings directly to the reinforced concrete slab or wall.

Lateral (transverse) and longitudinal bracing is used in various systems.

Post-TMI plant construction raceway hangers using substantial light steel strut frame construction including rolled (structural tube) shapes were observed in the D5/D6 Diesel Generator Building.

Photographs of the various types of Prairie Island raceways are provided in the PASS forms.

7.3 Specific Raceway Systems Evaluated

7.3.1 General Approach

The goal of the evaluation process is to determine overall plant raceway systems acceptability based on a detailed examination of a focused review scope. The GIP evaluation procedure requires that each plant evaluates 10 - 20 raceway supports selected for Limited Analytical Reviews (LAR) to envelop the most heavily loaded of the major different support configurations in use at that plant. Following the GIP, all of the raceway systems and their supports were first checked against the Inclusion Rules and Caveats. Then the Seismic Review team (SRT) selected representative, worst-case (bounding) samples of the raceway supports on which LARs were performed. This process allows for the establishment of the adequacy of the plant's raceway systems. The actual supports used for LAR were selected following GIP recommendations and at the discretion of the SRT relying on experience and technical judgment.

A limited number of large junction boxes were observed. The conduit/tray feeding into the junction boxes are well supported in all instances. In addition, the junction boxes are also well supported. No unusual conditions were observed.

Raceways spanning seismically separate buildings were also observed. The raceway trays and supports, including cable and conduit, possess adequate flexibility to absorb relative movement between the buildings. It is also noted that relative seismic movement between seismically separate buildings at Prairie Island is very small.

7.3.2 Cable Routing

The power supplies and control stations for the majority of safety related equipment are located in the PINGP Auxiliary Building along the G line central part. The safety related power supplies are the 4160 volt medium voltage switchgear cabinets Bus 15, Bus 16, Bus 25 and Bus 26, the 480 volt low voltage switchgear, Bus 111, Bus 112, Bus 121, Bus 122, Bus 211, Bus 212, Bus 221, and Bus 222; and the 480 volt motor control centers (see Table 7-1). The 4160 volt medium voltage switchgear is located on elevation 715 in the Turbine Building and 718 in the D5/D6 Building. The 480 volt low voltage switchgear is located in the Turbine Building on elevation 715, and Auxiliary and D5/Dg buildings on elevation 735. The control for the safety related equipment is in the control room, located on elevation 735, directly above the Relay Room.

Table 7-1 480 Volt Motor Control Centers

ID	Description	Building	Elevation
MCC 2KA2	MOTOR CONTROL CENTER 2KA BUS 2	AUX	695
MCC 1K1	MOTOR CONTROL CENTER 1K BUS 1	AUX	695
MCC 1K2	MOTOR CONTROL CENTER 1K BUS 2	AUX	695
MCC 1KA2	MOTOR CONTROL CENTER 1KA BUS 2	AUX	695
MCC 2K2	MOTOR CONTROL CENTER 2K BUS 2	AUX	695
MCC 2K1	MOTOR CONTROL CENTER 2K BUS 1	AUX	695
MCC 1X1	MOTOR CONTROL CENTER 1X BUS 1	AUX	715
MCC 1X2	MOTOR CONTROL CENTER 1X BUS 2	AUX	715
MCC 2X1	MOTOR CONTROL CENTER 2X BUS 1	AUX	715
MCC 2X2	MOTOR CONTROL CENTER 2X BUS 2	AUX	715
MCC 2J2	MOTOR CONTROL CENTER 2J BUS 2	AUX	715
MCC 1L1	MOTOR CONTROL CENTER 1L BUS 1	AUX	715
MCC 1L2	MOTOR CONTROL CENTER 1L BUS 2	AUX	715
MCC 2J1	MOTOR CONTROL CENTER 2J BUS 1	AUX	715
MCC 2L1	MOTOR CONTROL CENTER 2L BUS 1	AUX	715
MCC 2L2	MOTOR CONTROL CENTER 2L BUS 2	AUX	715
MCC 2LA1	MOTOR CONTROL CENTER 2LA BUS 1	AUX	735
MCC 1LA1	MOTOR CONTROL CENTER 1LA BUS 1	AUX	735
MCC 2LA2	MOTOR CONTROL CENTER 2LA BUS 2	AUX	735
MCC 1LA2	MOTOR CONTROL CENTER 1LA BUS 2	AUX	735
MCC 1MA2	MOTOR CONTROL CENTER 1MA BUS 2	AUX	755
MCC 1T1	MOTOR CONTROL CENTER 1T BUS 1	AUX	755
MCC 1M2	MOTOR CONTROL CENTER 1M BUS 2	AUX	755
MCC 1T2	MOTOR CONTROL CENTER 1T BUS 2	AUX	755
MCC 2M1	MOTOR CONTROL CENTER 2M BUS 1	AUX	755
MCC 2M2	MOTOR CONTROL CENTER 2M BUS 2	AUX	755
MCC 1M1	MOTOR CONTROL CENTER 1M BUS 1	AUX	755
MCC 2TA1	MOTOR CONTROL CENTER 2TA BUS 1	D5/D6	718
MCC 1AB2	MOTOR CONTROL CENTER 1AB BUS 2	SSCRN	695
MCC 1AB1	MOTOR CONTROL CENTER 1AB BUS 1	SSCRN	695
MCC 1AC1	MOTOR CONTROL CENTER 1AC BUS 1	TURB	695
MCC 1A2	MOTOR CONTROL CENTER 1A BUS 2	TURB	695
MCC 1AC2	MOTOR CONTROL CENTER 1AC BUS 2	TURB	695

Table 7-1 480 Volt Motor Control Centers (Continued)

ID	Description	Building	Elevation
MCC 1A1	MOTOR CONTROL CENTER 1A BUS 1	TURB	695
MCC 1TA2	MOTOR CONTROL CENTER 1TA BUS 2	TURB	695
MCC 2A1	MOTOR CONTROL CENTER 2A BUS 1	TURB	695
MCC 2A2	MOTOR CONTROL CENTER 2A BUS 2	TURB	695
MCC 2AC1	MOTOR CONTROL CENTER 2AC BUS 1	TURB	695
MCC 2AC2	MOTOR CONTROL CENTER 2AC BUS 2	TURB	695
MCC 1TA1	MOTOR CONTROL CENTER 1TA BUS 1	TURB	695
MCC 1R1	MOTOR CONTROL CENTER 1R BUS 1	AUX	735
MCC 1S1	MOTOR CONTROL CENTER 1S BUS 1	AUX	735
MCC 2R1	MOTOR CONTROL CENTER 2R BUS 1	AUX	735
MCC 2S1	MOTOR CONTROL CENTER 2S BUS 1	AUX	735

As a result, the majority of the control cabling for the safety related components at PINGP is routed through the Relay Room, either to equipment in the Control Room, or through the Relay Room west wall penetrations to the Auxiliary Building. The power cabling is routed in the overhead of the 715 or 735 elevations either to loads in the Turbine Building or through the Turbine Building wall penetrations to the Auxiliary Building.

In the Auxiliary Building, the majority of the SSEL equipment is located in the central part. The majority of the cabling runs directly west either in the 715' or 735' overheads. For the safety related equipment in containment, the power and control cables are routed through penetrations A, B, C, D, E and F.

Based on the equipment layout and cable routing, the majority of the cable trays are located in Relay Room, the Control Room, the vital switchgear room, and at the east wall of the Auxiliary Building.

As required by the GIP, the entire plant was inspected, however, the inspection focused on the cable tray and conduit systems located in the Auxiliary and Turbine Buildings, and the Unit 1 and Unit 2 Containments. The most heavily loaded cable tray supports were identified in the Relay Room. Ten cable hanger supports, listed below in Table 7-2, were chosen for limited analytical review. Drawings or sketches of the LAR supports are provided in the respective PASS Forms.

Table 7-2 Locations of Hangers Chosen for Limited Analytical Reviews

LAR Number	Description	Location
1	5 tier cable tray support with a vertical post and horizontal members to the bottom and side of the shell curvature. P1001 posts and P1004A horizontals. 5' hanger spacing.	Unit 1 Reactor Building, 695' elevation at Az. 290 degrees
2	4 tier trapeze cable tray and conduit support; posts welded to overhead building steel. P1001 posts and P1004A horizontals. 4-3/4' hanger spacing.	Unit 1 Reactor Building, 735' elevation at Personnel Airlock
3	6 tier trapeze cable tray and conduit support welded to overhead 4" WF beam which, in turn, is welded to building steel. P1001 posts and P1004A horizontals. 6' hanger spacing.	Unit 1 Reactor Building, 735' elevation between Personnel Airlock and Equipment Hatch

Table 7-2 Locations of Hangers Chosen for Limited Analytical Reviews (Continued)

LAR Number	Description	Location
4	3 tier trapeze cable tray and conduit support welded to overhead 4" WF beam which, in turn, is welded to building steel. P1001 posts and horizontals. 8' hanger spacing.	Unit 2 Reactor Building, 735' elevation AZ 330 deg. (north of Personnel Airlock)
5	8 tier multi bay trapeze support - all cable trays, welded to overhead 4" WF beams which, in turn, are attached to overhead concrete ceiling slab and beam structure. P1001 posts and P1004A horizontals. 7' hanger spacing.	Relay Room, Auxiliary Building, 715' elevation near west wall
6	4 tier trapeze cable tray and conduit support; posts welded to overhead building steel. P1000 posts and P1001 horizontals. 8' hanger spacing.	Turbine Building Mezzanine, 715' elevation Grid Location D.0/10.1
7	5 tier trapeze cable tray and conduit support; One post is attached to an overhead embedded strut in ceiling. The other post is welded to a base plate which is anchored bolted to the ceiling. P1001 posts and horizontals. 8' hanger spacing.	Bus Room 16, Turbine Building, 715' elevation near east wall
8	3 tier - 3 bay trapeze cable tray and conduit support; P1001 posts are attached to an overhead embedded strut in ceiling with 4-bolt brackets and knee braces. P1004A and P1001 horizontal members. 9-1/2' hanger spacing.	Auxiliary Feedwater Pump Room, Unit 1 side, Turbine Building, 715' elevation
9	3 tier trapeze cable tray and conduit support; P1001 posts and P1004A horizontal members. Posts are welded to overhead 12" channels. Channels are anchor bolted to concrete ceiling beams. 8-1/2' hanger spacing.	Auxiliary Building, 715' elevation, near Flash Tank
10	3 tier trapeze cable tray and conduit support; ; P1001 posts and P1004A horizontal members. P1001 posts are attached to an overhead embedded strut in ceiling with 4-bolt brackets.	Auxiliary Building, 695' elevation, in west hallway near Fuel Haul Area

7.3.3 Cable Data and Weight Determination

NSP maintains the cable tray fill data at PINGP in the Cable Tray Fill Report (CTFR) which is accessible on the Plant Information Systems Computer. With few exceptions, the cable trays at PINGP are identified by a unique number which is maintained in the CTFR. The cable tray fill data is presented in terms of actual fill area available and percent fill area available.

The CTFR was used to determine the cable tray fills for LAR 005, a multi-tier and multi-bay support located in the Relay Room. A visual determination was not practical because of the congested nature of the area. Standard GIP recommended cable tray fill weights were used for this evaluation based on the CTFR data.

All other LAR's were based on cable tray fills as visually determined by the SRT.

7.4 Raceway Seismic Evaluation Criteria and Walkdown Results

This section discusses the raceway seismic evaluations for the Prairie Island Nuclear Generating Plant.

7.4.1 GIP Inclusion Rules Results

As previously stated, all raceway systems in the Buildings noted in Section 7.2.1 were included in the walkdown. It is important to note that a very thorough review of most raceways, raceway supports and supporting concrete was accomplished.

Without exception, no anomalies in design or construction were found. All inspected raceways meet the requirements of Section 8.2.2 of the GIP as follows:

- Cable tray spans did not exceed the 10' limit between adjacent supports and the 5' limit for cantilevers;
- Conduit spans were within the limits required by Rule 2 of Section 8.2.2 [2.];
- On all cantilever bracket-supported systems cable trays and conduit were found secured to their supports so no tray or conduit sliding can occur;
- Channel nuts used with light metal framing systems were nuts with teeth (ridges) stamped into the nuts (Fig. 8-1, Ref. 2.);
- No "rigid boot" type connections or similar types(Fig. 8-2, Ref. 2.) were observed during the walkdown inspection;
- No beam clamps were observed during the walkdown inspection;
- Cast-iron anchor embedment rule implementation was resolved as follows: To check for cast iron anchorage embedments in a walkdown at all support locations was not feasible; however an SRT review of PINGP cabletray hanger detail drawings reveals the use of commonly used and well documented ductile steel anchor types (primarily Phillips shell anchors). No field evidence of cast iron embedments was found by the SRT. Therefore, this issue was judged to have no impact on Prairie Island.

Prairie Island meets the Cable Raceway Inclusion Rules of the GIP in their entirety.

7.4.2 GIP Other Seismic Performance Concerns & Seismic Interaction Review

In addition to the Inclusion Rules the SRT inspected the raceway systems for the Caveats known as "Other Seismic Performance Concerns" and "Seismic Interaction Review". The assessment results are as follows:

<u>Other Seismic Performance Concerns</u>

- All raceway anchorages were reviewed for adequacy in accordance with Section 8.2.3 [2.]. No concerns were found;
- No concerns were found regarding visible cracks, significantly spalled concrete, serious honeycombs or other gross defects in the concrete to which the raceway supports are attached;
- No significant corrosion of cable trays, conduit supports or anchorage was noted by the SRT;

- No noticeable sag of any conduit or cable tray as defined in Concern 4 of Section 8.2.3 [2.] was observed;
- No broken or missing cable tray and conduit components were found by the SRT;
- All cables inspected were restrained so they will be kept in the tray during an earthquake with the exception of that noted in vertical cable tray (2CU-T61-I) located near Pen 42D was without ties. Cabling was found protruding outside of tray envelope.. Per 6/7/95 telecon with G. Gore (NSP), the cabling was identified as non-safety however the concern will be remedied by the implementation of Maintenance Work Order #950416. No other concerns of that type were observed by the SRT.
- A sampling of plastic ties were pull-tested, and no brittle ties of plastic materials were found by the SRT;
- The SRT evaluated the raceways for stiff/short supports and found no instances of this design flaw. Prairie Island's hangers are of uniform height in long flexible runs of cable trays or conduit.

No findings were noted with respect to "Other Seismic Performance Concerns".

Seismic Interaction

- The raceway systems were reviewed for seismic proximity interaction in accordance with Appendix D [2.]. The SRT identified one seismic interaction concern in an area known as the operators exercise room located in the Auxiliary Building on elevation 735.
- The raceway systems were reviewed for falling hazards in accordance with Appendix D [2.].
- Conduit and cables were reviewed for sufficient flexibility to accommodate differential displacement between safe shutdown equipment and adjacent equipment and structure. No concerns were found by the SRT;
- No Isolated Outliers (other findings) were found by the SRT.

In conclusion, one findings was noted with respect to "Seismic Interaction."

7.5 Limited Analytical Review (LAR) Results

This Limited Analytical Review (LAR), performed within the scope of Unresolved Safety Issue (USI) A-46, evaluates the structural integrity of cable tray and conduit supports, which have been chosen as representative, worst case examples of the raceway support configurations within the Prairie Island Nuclear Generating Plant.

The hangers (members, connections and fittings) were first evaluated for static, dead load stresses. They were then evaluated for lateral load ductility to ensure that there were no brittle failure loads. Finally, the vertical capacity was checked by comparing the support anchorage capacity to 3 times the support deadweight. If any of these evaluations fail, the support is declared an "outlier" and additional evaluations of lateral load capacity are performed. This section describes the criteria and overall results for all ten LARs.

In all, 10 raceway systems (supports) were chosen for LAR evaluation as shown in Table 7-2.

7.5.1 Summary of Results

The critical interaction value and related comments for each of the raceway support evaluations in this LAR are summarized in Table 7-3 below. Refer to Reference 11. for details of each of the evaluations.

Table 7-3 Critical Interaction Values

LAR No.	Interaction Value						
	Members		Fittings/ Connections		Anchorage*		Maximum
001	0.16	DL	0.03	DL	0.25	DL	0.25
002	0.32	DL	0.08	DL	0.15	3DL	0.32
003	0.29	DL	0.04	DL	0.05	3DL	0.29
004	0.08	DL	0.02	DL	0.04	3DL	0.08
005	0.61	DL	0.13	DL	1.10	3DL	1.10**
006	0.42	DL	0.06	DL	0.10	3DL	0.42
007	0.20	DL	0.11	DL	0.50	3DL	0.50
008	0.10	DL	0.15	DL	0.67	3DL	0.67
009	0.12	DL	0.06	DL	0.20	3DL	0.20
010	0.08	DL	0.07	DL	0.67	3DL	0.67

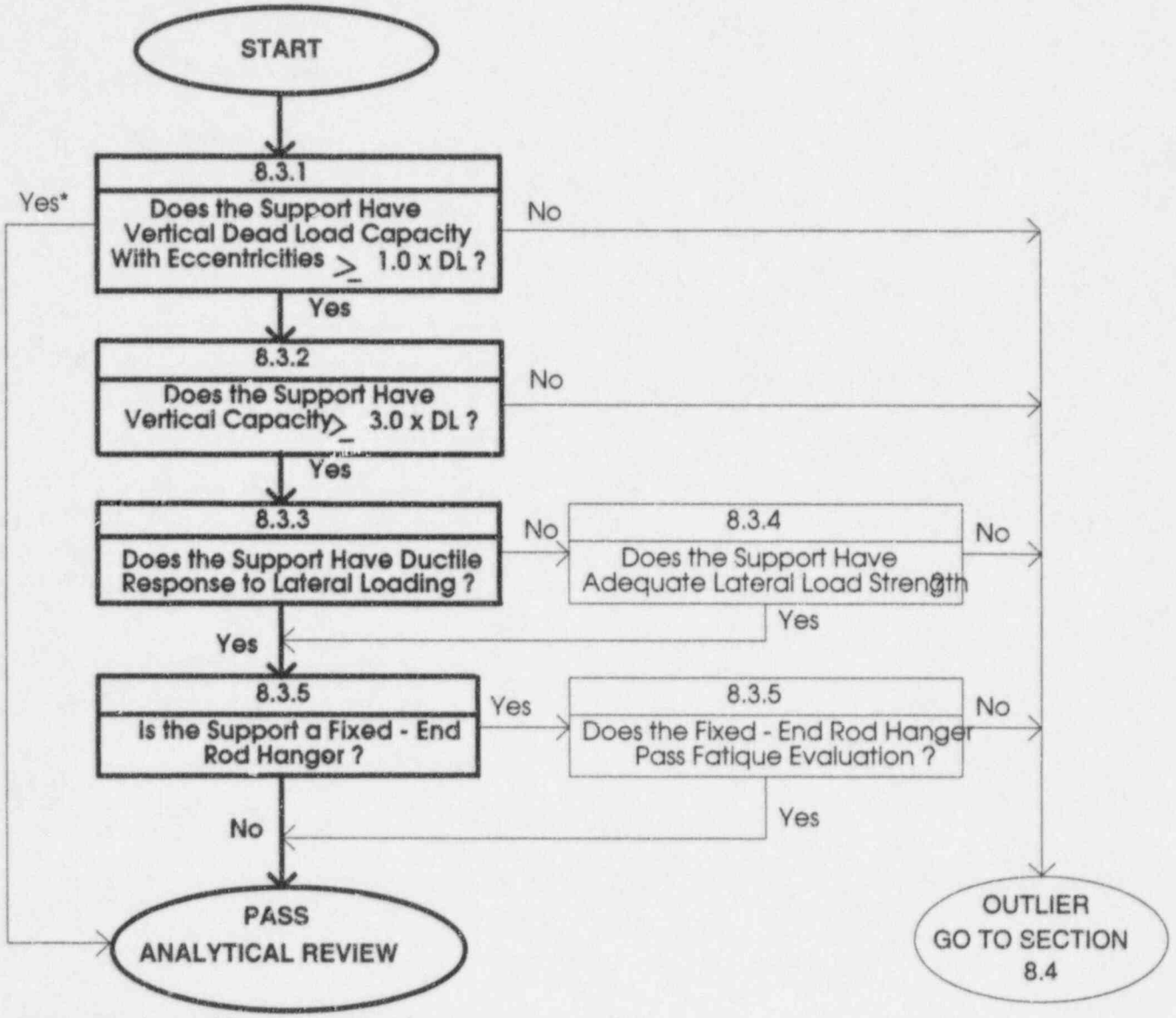
DL - Dead Load
3DL - 3x Dead Load (Vertical Load Check)

** Acceptable per SRT Judgment
* Support connection to building structure

7.5.2 Logic Diagrams for Cable Tray and Conduit Support Evaluations

Logic diagrams indicating the evaluation path taken to demonstrate the acceptance of each of the raceway supports are shown below. Note that the particular evaluation path taken for the support in question is defined in heavy outline. As previously noted, the hand calculations are given in Reference 11.

LAR Nos. 002 through 010

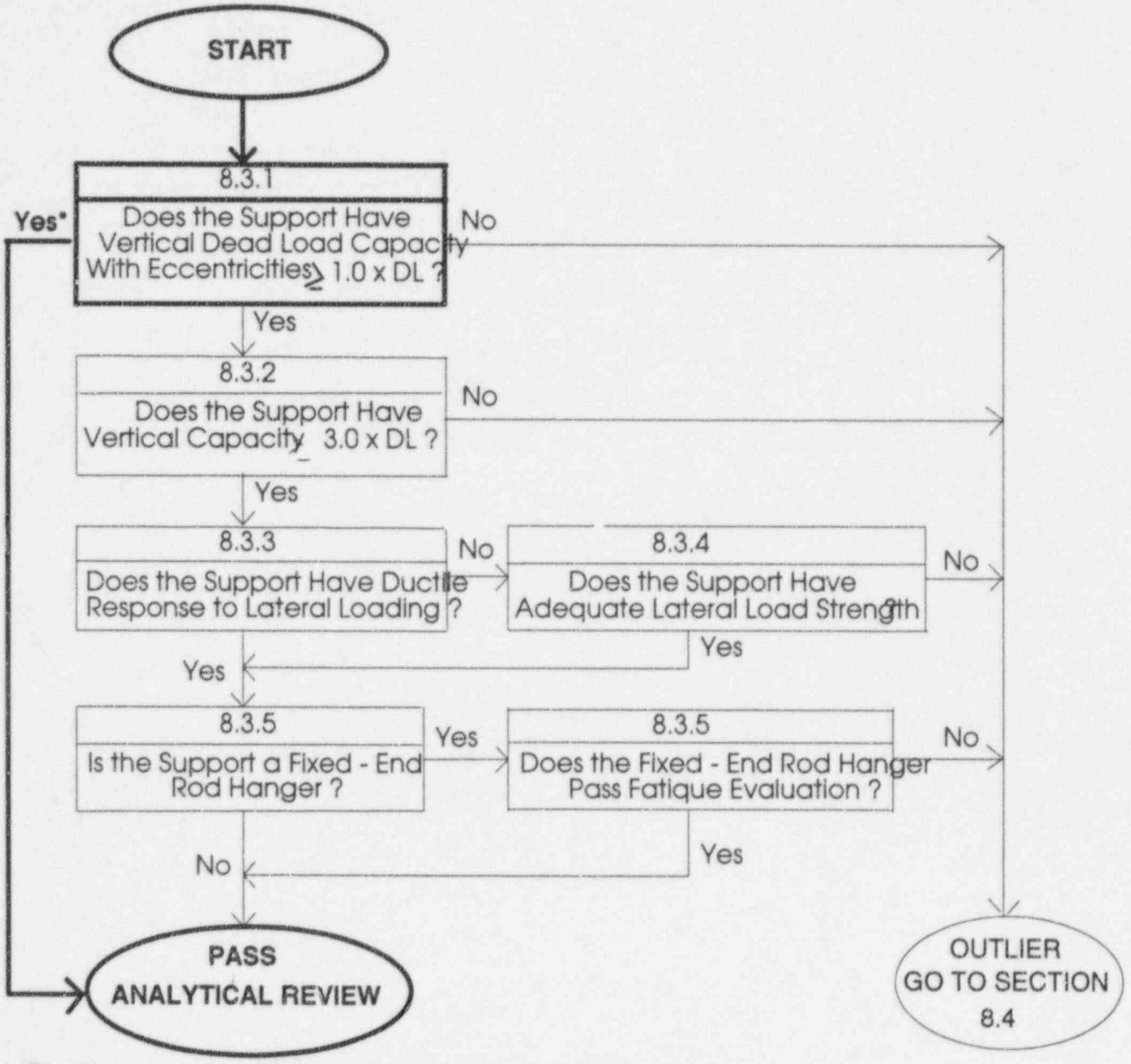


* (Directly mounted or rigidly cantilevered from structural wall)

7.5.2 Logic Diagrams for Cable Tray and Conduit Support Evaluations (Cont.)

LAR Nos. 001

Note: Evaluation path is defined ir. heavy outline.



* (Directly mounted or rigidly cantilevered from structural wall)

7.6 Results and Conclusions

The electrical raceways were walked down as part of the USI A-46 effort. All areas of the plant were surveyed and inspected against inclusion rules and caveats for raceways such as maximum spans, missing or broken hardware, and good design practices as presented in the GIP, Section 8. The results were documented in Plant Area Summary Sheets. In addition, bounding and representative supports were selected for structural and seismic evaluations called Limited Analytical Reviews (LAR). The LAR evaluations checked dead load stresses, ductility, and vertical capacity. Each of the ten cable tray and conduit supports chosen for the LAR met the guidelines as set forth in Section 8.3 of the GIP.

The electrical raceways at the Prairie Island Nuclear Generating Plant are concluded to meet the Cable and Conduit Raceway Rules of the GIP in their entirety based on the plant walkdowns and Limited Analytical Reviews performed by the SRT.

7.7 Summary of Cable and Raceway Outliers

The SRT identified a single incidence of seismic interaction concerns in the cable and raceway review. Unrestrained exercise equipment existed in the operators exersise room in the Auxiliary Building on elevation 735. Some exercise equipment attachments are stored in and against cable tray. Potential seismic interactions exist with cable tray 2ART141, a pull box, and safety related conduits labeled 2CNB1 and 1CNB1, and also other conduits labeled 1EM-13 and 2EM-13. The SRT observed that dumbells resting on the floor could roll around during a seismic event in this area.

8. Description of the Equipment Outliers

This section discusses the outliers identified during the USI A-46 walkdowns conducted at Prairie Island. The outliers are identified from the Twenty Classes of Equipment discussed in Section 4, the Tanks & Heat Exchangers Review discussed in Section 6, and the Cable Tray & Conduit Raceway Review given in Section 7. Relay outliers are discussed in the Prairie Island Relay Evaluation Report [20.].

An outlier is an item of equipment which does not comply with all of the screening guidelines provided in the GIP. The GIP screening guidelines are intended to be used as a generic basis for evaluating the seismic adequacy of equipment. If an item of equipment fails to pass these generic screens, it may still be shown to be adequate by additional evaluations.

Section 9 provides a discussion of the disposition or corrective action, as appropriate, for each outlier discussed below.

8.1 Generic Outlier Issues

The Seismic Review Teams identified only one generic issue during the final walkdowns that affected A46 equipment items. In numerous locations, overhead florescent lights connect to supports by open S-hooks. During a seismic event, this configuration could possibly release the light fixture casuing seismic interaction hazards. PINGP issued Work Order #9510032 to crimp the S-hooks on overhead light fixtures. This work will proceed as a general maintenance activity.

8.2 Equipment Specific Outliers Identified During the Final A46 Walkdowns:

Total of ninety-six (96) Outliers identified during the walkdowns are listed below. The outlier discussions below group the equipment with a common type of outlier. The proposed resolution of these outliers are discussed in Section 9.

Table 8-1 Description of Class 0 - 20 Equipment Outliers

ID	EQUIPMENT	OUTLIER FINDING
A1.	Motor Control Centers: MCC 1AB1, MCC 1AB2, MCC 2R1, MCC 2S1	The anchorage has insufficient capacity to resist the seismic demand.
A2.	Motor Control Center: MCC 1K1	The "RHR Block Lifting Fixtures" stored nearby present an interaction hazard to the MCC
A3.	Motor Control Centers: MCC 1TA1,MCC 1TA2	The MCC's rest on 2.75" shims causing bending in the anchor bolts.
A4.	Motor Control Centers: MCC 1L2, MCC 2K2	These MCC's contain essential relays and have potential seismic interactions from nearby piping.

Table 8-1 Description of Class 0 - 20 Equipment Outliers (Continued)

ID	EQUIPMENT	OUTLIER FINDING
A5.	Motor Control Center: MCC 2LA2	The SRT observed that this MCC rocks about its weak axis when bumped, making the welding at the base suspect.
A6.	Reactor Trip Breakers: 2-52/RTA, 2-52/RTB	An unbraced overhead room chiller supported on rod hangers may swing and break nearby water piping which would sptay the room. Also, a unit heater hung on 10 ft long rods could swing and break its steam heating piping.
A7.	Pressurizer Heater Group A Transformer 2PZRHTRA/XFMR	A unit rod hung unit heater could swing and break its piping spraying the area.
A8.	Diesel Generator Submersable Oil Pumps: 045-271, 045-273, 045-301, 045-302	Submersable pumps are not part of GIP's earthquake experience data base.
A9.	DD CLP: 145-392, 245-392	Anchor bolts for these pumps do not meet the least acceptable edge distance (4D). Also, the vertical shaft length exceeds the maximum length in the bounding spectrum caveat.
A10.	Pressurizer Relief Valves: RC-10-1, RC-10-2, 2RC-10-1, 2RC-10-2	The floor response spectra (demand) exceeds the capacity spectra of 1.5 times the bounding spectrum.
A11.	Fan Coil Unit Cooling Water Control Valves: CV-39401, CV-39409	Contact with conduits could break the solenoid tap connection for these valves.
A12.	FCU Cooling Water Control Valve: CV-39421,	Contact between the valve diaphragm housing and a 1" conduit could cause chatter of the limit switches in the solenoid valve
A13.	Shroud Cooling Coils Chilled Water Control Valves: CV-39405, CV-39417, CV-39419	The floor response spectra (demand) exceeds the capacity spectra of 1.5 times the bounding spectrum.
A14.	Screenhouse Exhaust Fans: 132-281, 232-281	The seismic demand exceeds the seismic capacity. Also, the anchorage details for these fans could not be determined.
A15.	Diesel Generator Outside Air Damper SV: SV-33498	This valve has a potential for differential displacement between the wall and ductwork that supports the valve's tubing.
A16.	Chilled Water Cooling Water Isolation Valve: SV-37467	Seismic demand based on floor response spectra exceeds seismic demand based on 1.5 times the bounding spectra.
A17.	Relay Room Fan Coil Units: 074-031, 074-032, 074-033, 074-034	Anchorage capacity of the FCU's could not be established.
A18.	Auxiliary Feedwater Pump Fan Coil Units: 174-051, 274-051	Anchorage capacity of the FCU's could not be established. Also, a potential seismic interaction exists for 174-051 with a ceiling mounted multi-tier conduit.

Table 8-1 Description of Class 0 - 20 Equipment Outliers (Continued)

ID	EQUIPMENT	OUTLIER FINDING
A19.	Containment Fan Coil Unit: 174-013	The floor response spectra (demand) exceeds the capacity spectra of 1.5 times the bounding spectrum.
A20.	Fan Coil Unit Control Dampers: CD-34076 through 34079, CD-34084 through 34087,	The floor response spectra (demand) exceeds the capacity spectra of 1.5 times the bounding spectrum.
A21.	Control Room Water Chillers: 075-011, 075-012	These chillers have unconfined steel isolator springs in the base support.
A22.	Distribution Panels: PNL 11, 12, 21, 22	The panels base is elevated above the floor subjecting the anchorage to bending stresses
A23.	Batteries: 11 BATT, 21 BATT	The batteries are over 10 years old.
A24.	Batteries: 12 BATT, 22 BATT	Some of the battery spacers are missing in each rack.
A25.	Battery Chargers: 11 BATT CHG, 12 and 22	The cabinet bases are elevated above the floor subjecting the anchorage to bending stresses. Also, there is a sliding door counter weight which could swing into 22 BATT CHG.
A26.	Diesel Generators: 034-011, 034-021	A local control panel mounted on the DG skid is supported on very flexible (wobbly) steel springs.
A27.	Control Room Panels and Racks: 14MR, 1NR3, 1NR4, 2NR3, 2NR4, A, B-1, B-2, C-1, C-2, D-1, D-2, E-1, E-2, F-1, F-2, G-1	Aluminum diffussers in the control room ceiling pose a personnel hazard.
A28.	Diesel Generator Remote Terminal Unit Cabinets: D5/RTU, D6/RTU	A computer table with a loose computer CRT and printer sits adjacent to the RTU cabinets presenting a seismic interaction hazard.

9. Resolution of Outliers

The licensing cover letter transmitting this report describes the strategy for outlier resolution.

10. References

1. Generic Letter 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46", USNRC, Washington, D.C., February 19,1987.

2. "Generic Implementation Procedure (GIP), for Seismic Verification of Nuclear Plant Equipment", Revision 2, Corrected, 2/14/92, Seismic Qualification Utility Group.

3. "Supplemental Safety Evaluation Report No. 2 (SSER #2) on GIP-2", USNRC, Washington, D.C., May 22, 1992.

4. USI A-40 "Seismic Design Criteria Short-Term Program", USNRC, Washington, D.C.

5. USI A-17 "Systems Interactions In Nuclear Power Plants" USNRC, Washington, D.C.

6. NSP Response to Supplement 1 to GL 87-02 on SQUG Resolution of USI A-46, Prairie Island Nuclear Generating Plant, Letter from Thomas M. Parker (NSP) to USNRC, dated September 21, 1992.

7. USNRC Letter "Safety Evaluation of Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2, 120-day Response to Supplement No. 1 to Generic Letter 87-02 (TAC Nos. M69474 and M69475)", M. Gamberoni (USNRC) to T. M. Parker (NSP), dated November 30, 1992.

8. Stevenson & Associates, "Prairie Island Nuclear Generating Plant Seismic Response Spectra for USI A-46 Program", 93C2807-C-002, March 7, 1994.

9. SPECTRA Software Package, Stevenson & Associates, Version 2, November, 1992.

10. EPRI Report NP-7146, "Development of In-Cabinet Amplified Response Spectra for Electrical Panels and Benchboards." Revision 0, Electric Power Research Institute, Palo Alto, CA, prepared by Stevenson & Associates, December, 1990.

11. "Cable and Conduit Raceway Limited Analytical Review (LAR) for USI A-46 at Prairie Island Nuclear Generating Plant" Calc. 93C2807-C-011, Rev. 0, 10/26/95, by Stevenson and Associates.

12. SQUG Letter from N.P. Smith, SQUG Chairman to J.G. Partlow of USNRC, *Subject: Revision 2A to the Generic Implementation Procedure*, dated March 26, 1993.

13. SSRAP Report, "Use of Seismic Experience Data to Show Ruggedness of Equipment in Nuclear Power Plants," Senior Seismic Review and Advisory Panel, Revision 4.0, February 28, 1991.

14. Northern States Power Company, Prairie Island Nuclear Generating Plant - Drawings. (Dwg. numbers are specified where referenced).

15. EPRI Report NP-5228-SL, "Seismic Verification of Nuclear Plant Equipment Anchorage (Revision 1)." Electric Power Research Institute, Palo Alto, CA, prepared by URS/John A. Blume & Associates, Engineers, June, 1991.

16. ACI 318-83, "Building Code Requirements for Reinforced Concrete", American Concrete Institute, 1983.

17. EPRI Report NP-6041-SL, "A Methodology for Assessment of Nuclear Power Plant Seismic Margin (Revision 1).", Electric Power Research Institute, Palo Alto, CA, prepared by JR Benjamin Associates et. al., August, 1991.

18. NSP, "Prairie Island Updated Safety Analysis Report"

19. ANCHOR 3.0 Software Package (with Verification and Users Manuals), Rev. 0, 8/16/90 by Stevenson and Associates.

20. NSP, "USNRC USI A-46 Resolution, SSEL and Relay Evaluation Report" for Prairie Island Nuclear Generating Plant, Units 1 and 2", November, 1995.

21. "Prairie Island Nuclear Generating Plant Earthquake Analysis: Reactor-Auxiliary-Turbine Building", John A. Blume & Associates Report JAB-PS-02, January 22, 1971

22. "Prairie Island Nuclear Generating Plant Earthquake Analysis: Reactor-Auxiliary-Turbine Building Response Acceleration Spectra", John A. Blume & Associates Report JAB-PS-04, February 16, 1971

23. "Prairie Island Nuclear Generating Plant Station Blackout/Electrical Safeguards Upgrade (SBO/ESU) Program Design Report", Rev. 2, dated August 18, 1993.

24. EPRI TR-103960, "Recommended Approaches for Resolving Anchorage Outliers",Final Report June 1994

Appendix A: Peer Review Assessment

RPK
Structural Mechanics Consulting, Inc.
Robert P. Kennedy
18971 Villa Terrace, Yorba Linda, CA 92686 • (714) 777-2163

October 23, 1995

Mr. Albert M. Kuroyama
Project Manager
Prairie Island Nuclear Generating Plant
1717 Wakonade Drive East
Welch, MN 55089

Subject: Peer Review of A-46 Walkdown Performed by Stevenson & Associates (S&A)

Dear Mr. Kuroyama:

On July 25, 1994, I conducted a peer review walkdown of the A46 walkdown performed by Prairie Island (PI) engineers and their contractor, Stevenson & Associates (S&A). On August 16, 1994, I issued a letter (copy attached) to Mr. Bihari Desai (PI) summarizing my peer review. I made several specific comments and recommendations which are not repeated herein. My overall finding was that the walkdown was of high quality and consistent with the requirements of the Generic Implementation Procedure (GIP) and that the conclusions being reached were appropriate.

However, final Screening Evaluation Worksheets (SEWS) and Outlier Seismic Verification Sheets (OSVS) were not available at the time of my previous peer review walkdown, and my review of a sample of completed SEWS and OSVS was left as an open issue. I have now completed my review of a sample of SEWS and OSVS. The sample selected is listed in the attached table. All eight reviewed SEWS appear to be complete and appropriately filled out. The conclusions of the Seismic Review Team (SRT) appear reasonable.

On four (MCC 1AB2, 045-301, 075-011, and PNL 11) of the eight SEWS, the SRT concluded that seismic outlier issues existed and completed OSVS forms. These OSVS forms clearly define the outlier issues involved and I concur with the defined outlier issues. No proposed method of resolving outliers has been provided. Although providing a proposed method of outlier resolution is optional, I strongly recommend that Prairie Island develop and implement a set of proposed methods of resolving these outliers within a reasonable time frame. The outlier issues on MCC 1AB2, 075-011, and PNL 11 are seismically significant and are

relatively easily fixed. The outlier issue on 045-301 appears to be primarily a "paper" issue and can probably be resolved by a "paper" study.

This letter closes all open issues on my peer review of the A46 seismic walkdown of Prairie Island. I appreciate the opportunity to have been of service. Please contact me if you have any questions.

Sincerely,

Robert P. Kennedy

Robert P. Kennedy

Table: Peer Reviewed SEWS

Component ID	Description	Class
MCC 1AB2	Motor Control Center 1AB Bus 2	1
MCC 1M1	Motor Control Center 1M Bus 1	1
045-301	121 Diesel Cooling Water Pump Oil Storage Tank Submersible Pump	6
CV-31084	11 Steam Generator Main Steam Safety Relief to ATM Control Valve	7
SV-37036	RCS Vent System Pressurizer Vent SV	8
075-011	121 Control Room Water Chiller	11
PNL 11	Distribution Panel 11	14
PNL 116	Non-Interruptable Panel 116	14

RPK
Robert P. Kennedy

Structural Mechanics Consulting, Inc
18971 Villa Terrace, Yorba Linda, CA 92686 • (714) 777-216

August 16, 1994

Mr. Bihari Desai
Northern States Power Company
Prairie Island Nuclear Power Plant
1717 Wakonade Drive East
Welch, MN 55089

Subject: Preliminary Peer Review of A-46 Walkdown Performed by Stevenson & Associates (S&A)

Dear Mr. Desai:

Please let this letter serve as my comments concerning the subject review. This site review is considered preliminary in that final Screening Evaluation Worksheets (SEWS) are not yet completed for Prairie Island (PI). I recommend another site visit near the end of the project when final SEWS are in place.

Walkdown participants were Messrs. B. Desai and M. McKeown of the PI staff, Mr. W. Djordjevic of S&A, and myself acting as peer reviewer. The walkdown was conducted in all accessible areas of the plant on July 25, 1994. All equipment in those accessible areas were reviewed with specific attention given to potential outliers as determined by the Seismic Capability Engineers (SCE). The only areas not reviewed were the Containments since both units were in full operation. I found the work and the assessments made by PI engineers and their contractor, Stevenson & Associates (S&A), to be of high quality and consistent with the requirements of the Generic Implementation Procedure (GIP) and the conclusions to be appropriate.

Specific comments and recommendations are offered hereafter for PI's consideration:

1. 1ARP1	Regarding the Relay Racks in the Unit 1 relay room, many of them are supported on shims due to the pitched floor design for drainage purposes. I do not consider them outliers so long as the bolt bending is evaluated and found acceptable. This comment applies to all cabinets/panels in the relay room. No open S-hooks were noted in the relay room.
2. D1 & D2 Static Exciter	Found open S-hooks above the Exciter. Ladder hung on wall behind D2. Exciter should be chained to prevent ladder from falling into Exciter.
3. MCC 1TA2	Scaffolding hung on wall behind MCC and D2 Exciter should be chained to prevent it from falling into equipment.

4. 22 Battery Charger	SCE's identified concern with counter weight on open S-hook swinging into the charger or falling off. This would only occur if the door were open and since the door is normally closed due to the counter weight, this is not considered a concern by me. The counter weight could swing into the 125 VDC 22 Panel, but this panel contains no relays so this is not a concern.
5. MCC 2AC2	There is an approximately 3/8" gap between the top of the MCC and an adjacent cable tray hanger. Check if they have the potential to collide.
6. 31411 & 31410	Limit switches are in contact with one another and thus could break off during an event.
7. Station Batteries (Room 12)	Some battery cells have no spacer above the batten connecting rods. This violates spacer caveat for Class 15. Check if IEEE 344 seismic qualification test was performed on this same configuration to resolve the issue; otherwise, insert spacers above rods.
8. Horizontal pumps	Some pumps have alignment pins or lateral blocks (such as TDAFWP and 12MDAFWP), and some do not (such as MDAFWP, 11TDAFWP and S1 pumps). SQUG needs to determine whether this is an issue or not.
9. Diesel Generators	a) Plant Hatch had similar issue as PI with soft springs on local DG control panel mounted on skid. Check with Don Moore on how they resolved it. b) Check on whether or not fire piping overhead is seismically evaluated and determine if system is charged. If charged, broken piping could leak water on DG.
10. B121 SWGR and XMFR	Chain step ladder in vicinity
11. B15 Bus	Chain ladder behind the Bus.
12. Buses 122 & 222, & Bkr 122C	Check Westinghouse manufactured cabinets adjacent to MCC 1P and 2P for positive anchorage as they may pose an interaction hazard to noted buses/breakers
13. 1 & 2 NR4	Instrument panels in contact with Panel F (main control board) on both units. Interaction issue only if either cabinet(s) contain essential relays.
14. Control Room	Aluminum ceiling diffuser panels should be secured to T-bar drop ceiling framing in some fashion to preclude their falling on operator personnel and injuring them. Seismic housekeeping in control room appears very good and no issues were noted.
15. 121 Control Room Chilled Water Air Separator	If glass breaks, what happens to the control room chilled water system?

16. 31205	Valve is directly in contact with wall (no clearance). Check piping displacements to determine if this is an issue, or investigate changing valve orientation, or support valve and pipe.

I will be happy to answer any questions you have regarding this peer review assessment. Please contact me or Mr. W. Djordjevic of Stevenson & Associates to discuss these matters and any future peer reviews that may be called for.

Sincerely,

Robert P. Kennedy

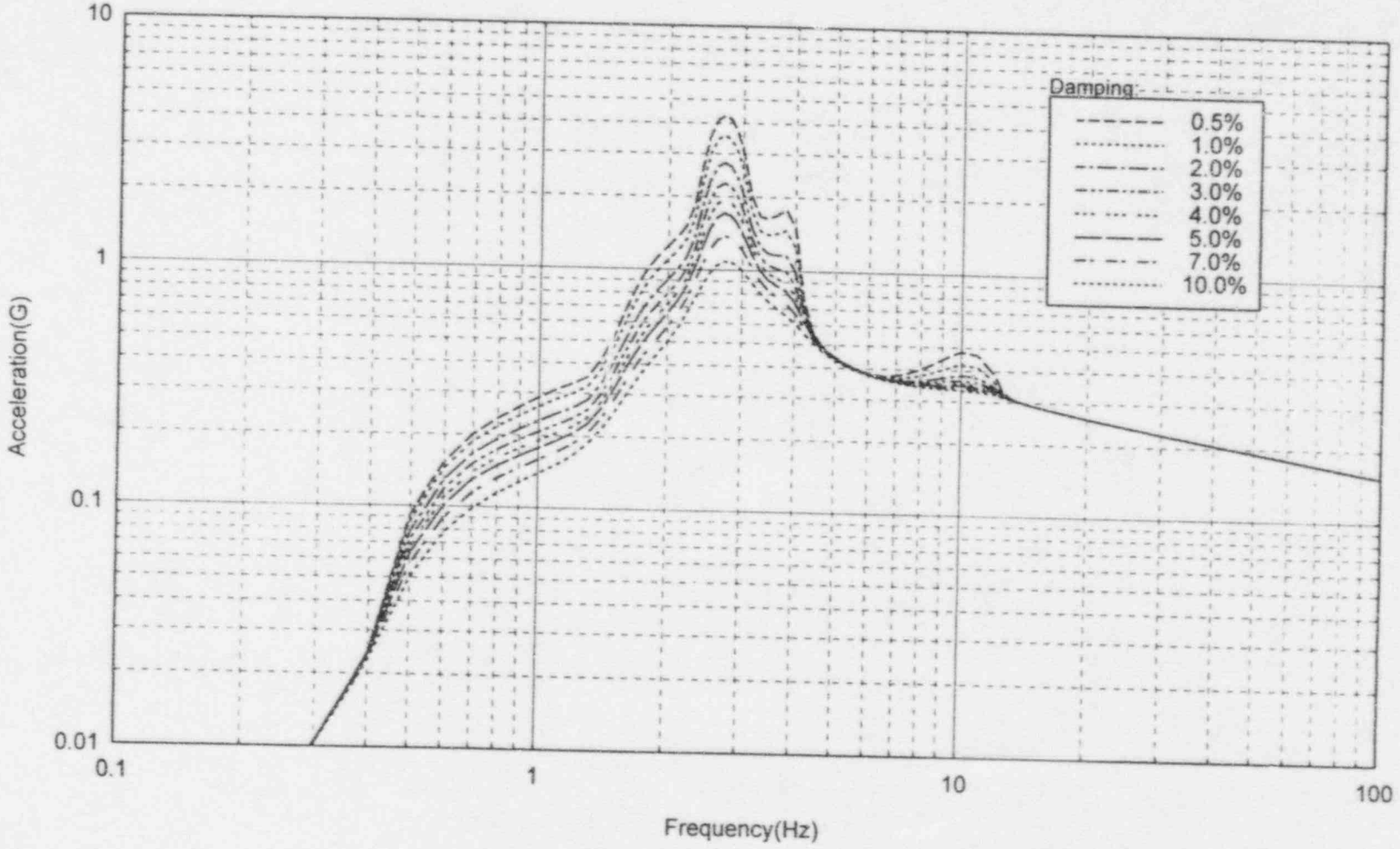
Robert P. Kennedy

cc:
Mark V. McKeown, PI
Walter Djordjevic, S&A

Appendix B: Seismic Design Basis Spectra

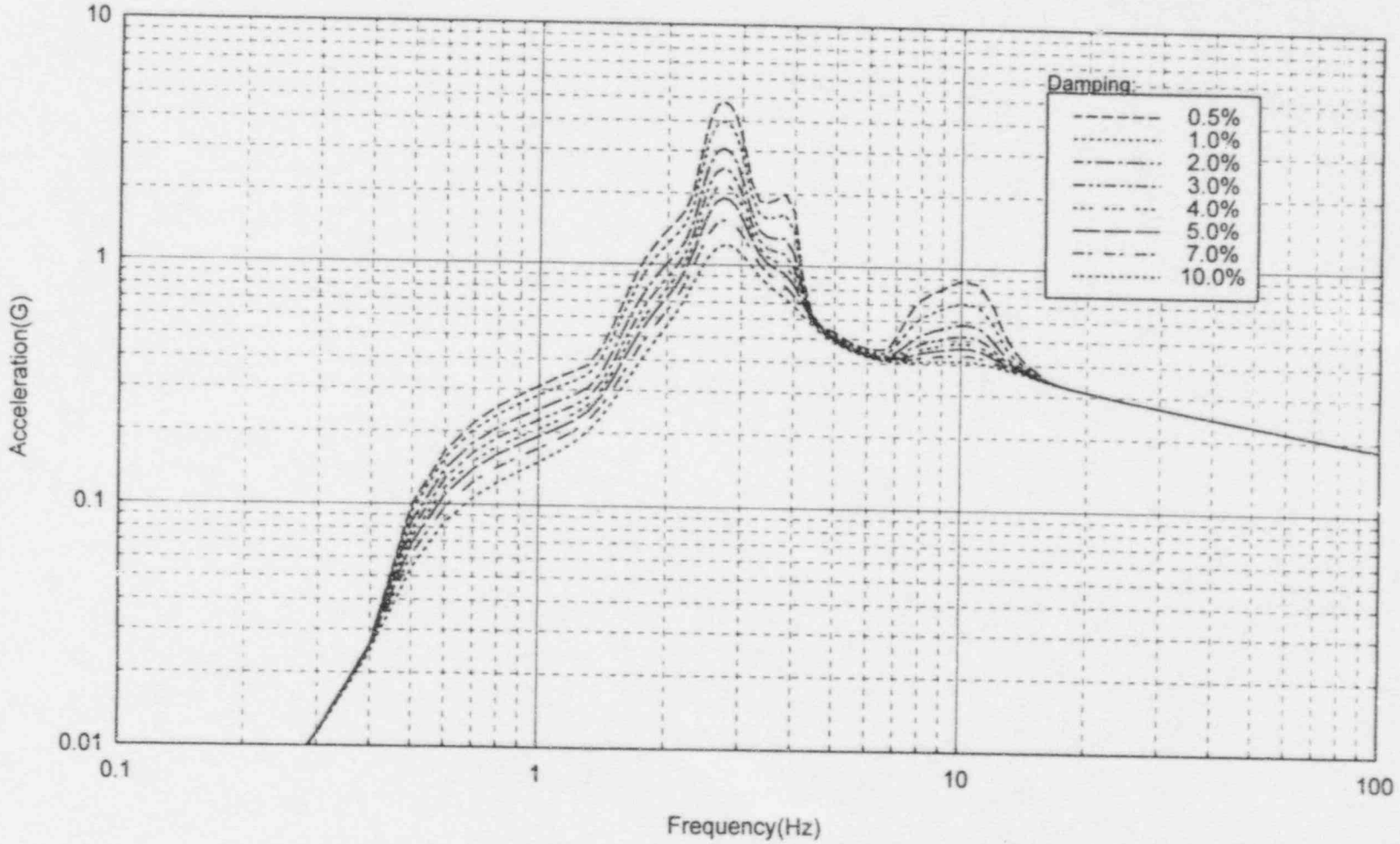
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Auxiliary (Concrete)
MASS POINTS : 29
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 755.00



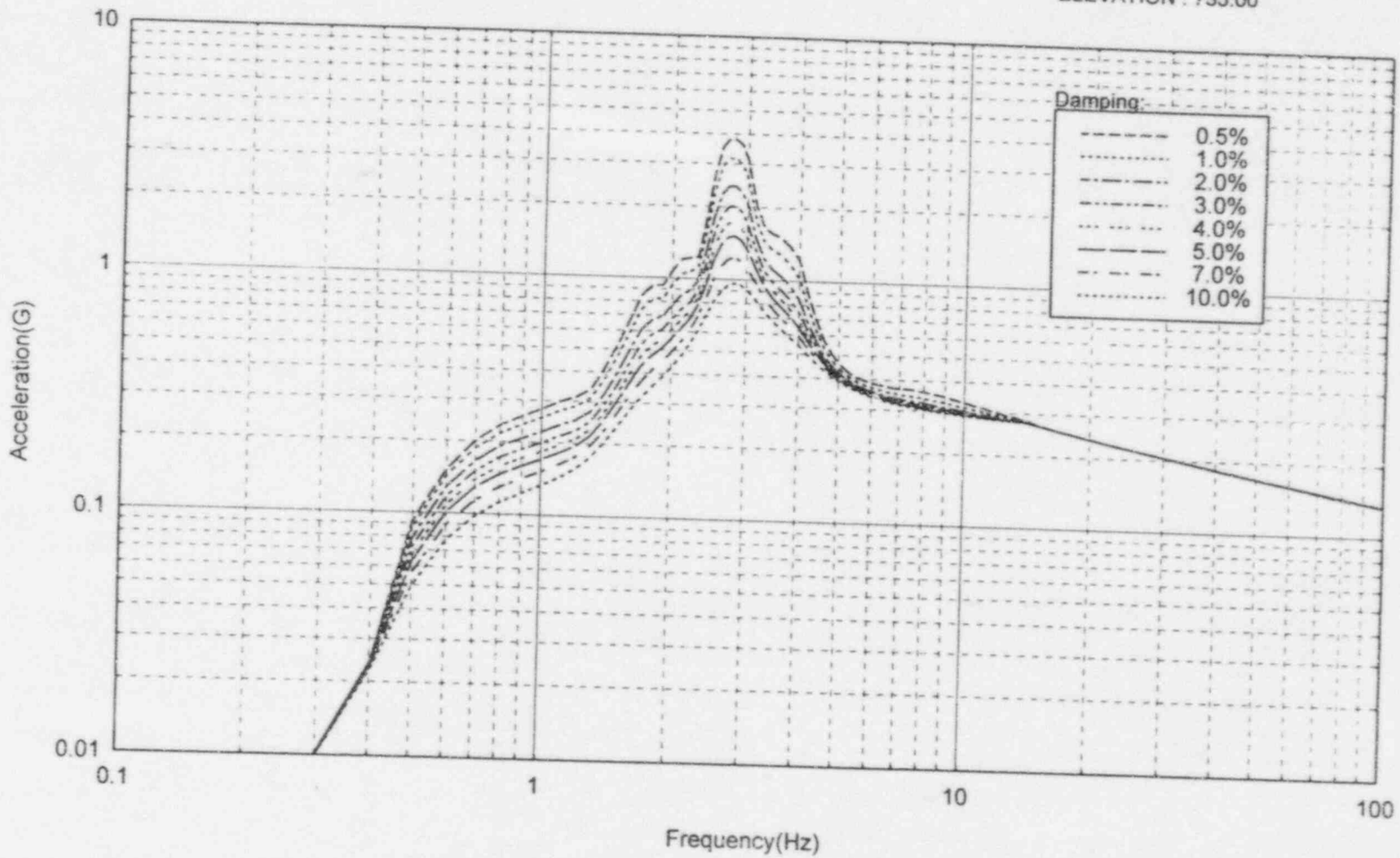
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Auxiliary (Concrete)
MASS POINTS : 29
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 755.00



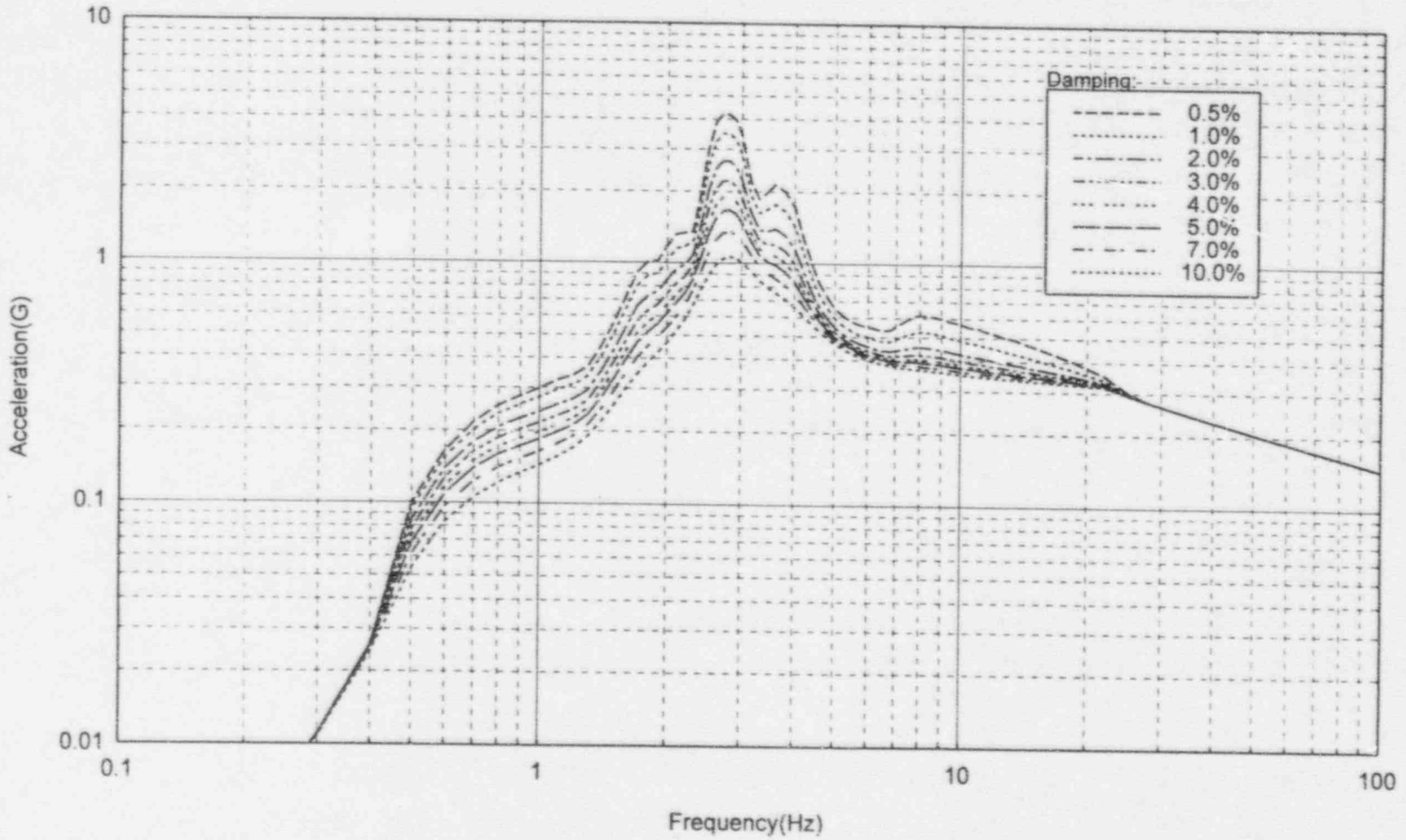
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Auxiliary (Concrete)
MASS POINTS : 30
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 735.00



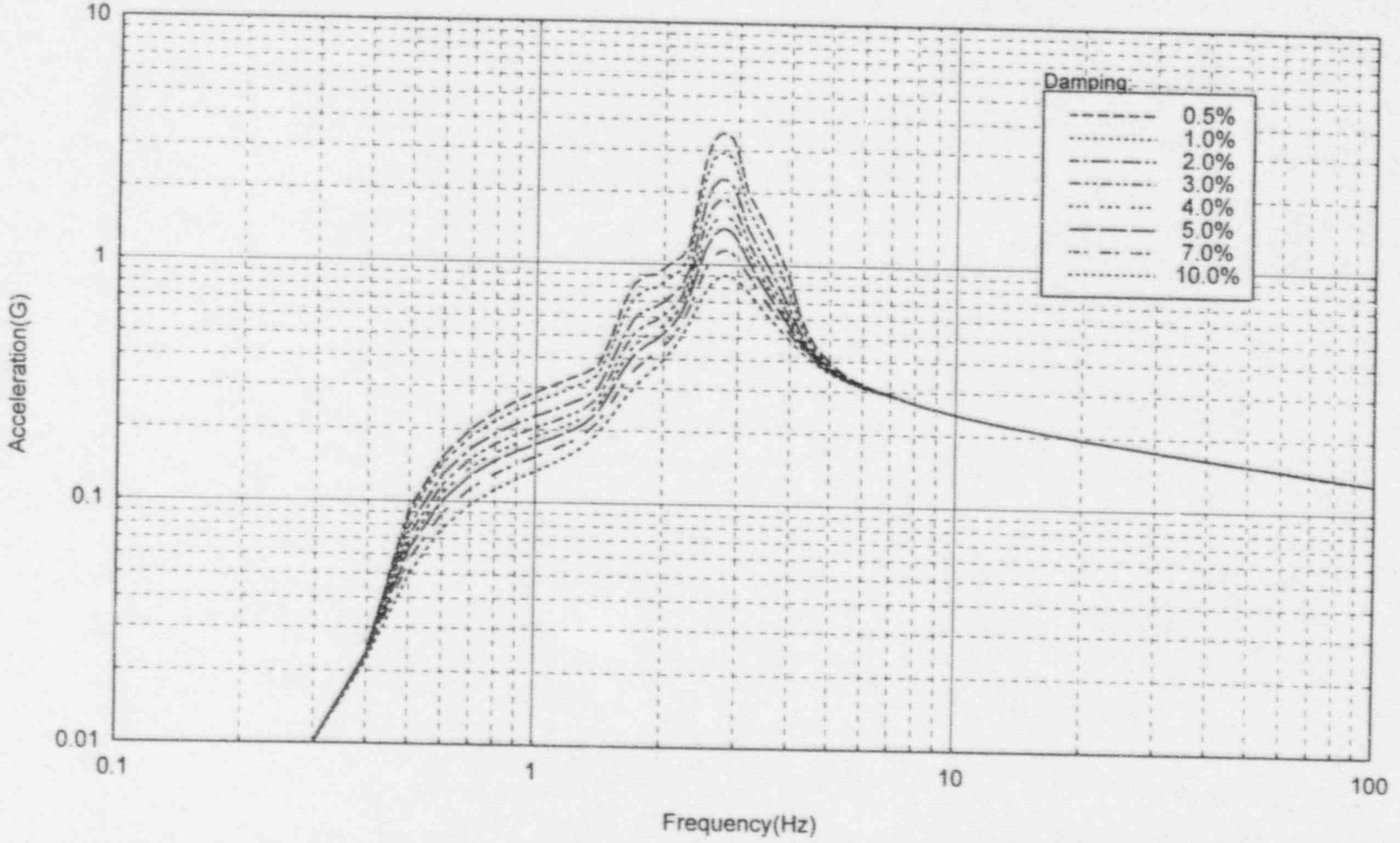
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Auxiliary (Concrete)
MASS POINTS : 30
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 735.00



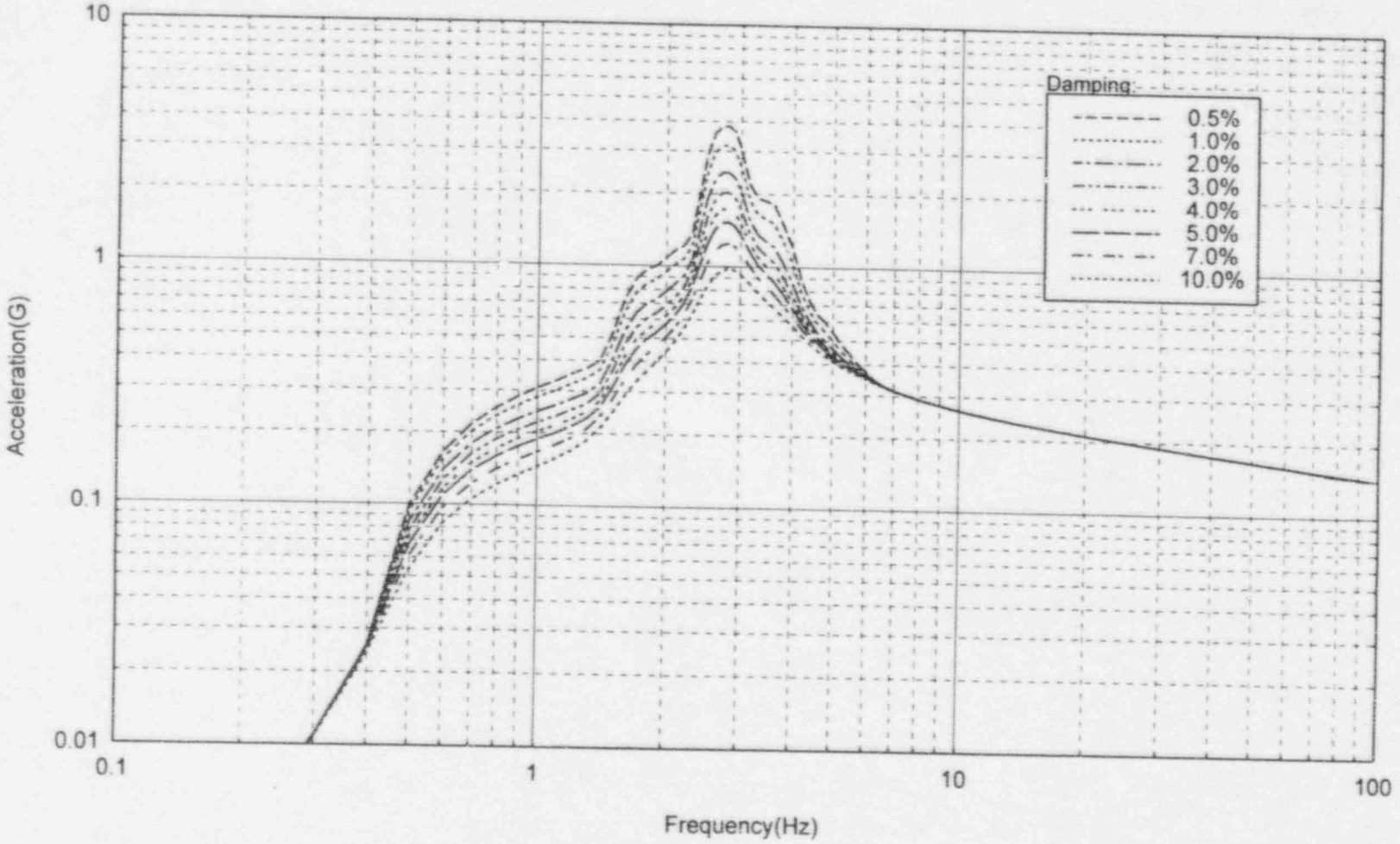
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Auxiliary (Concrete)
MASS POINTS : 31
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 715.00



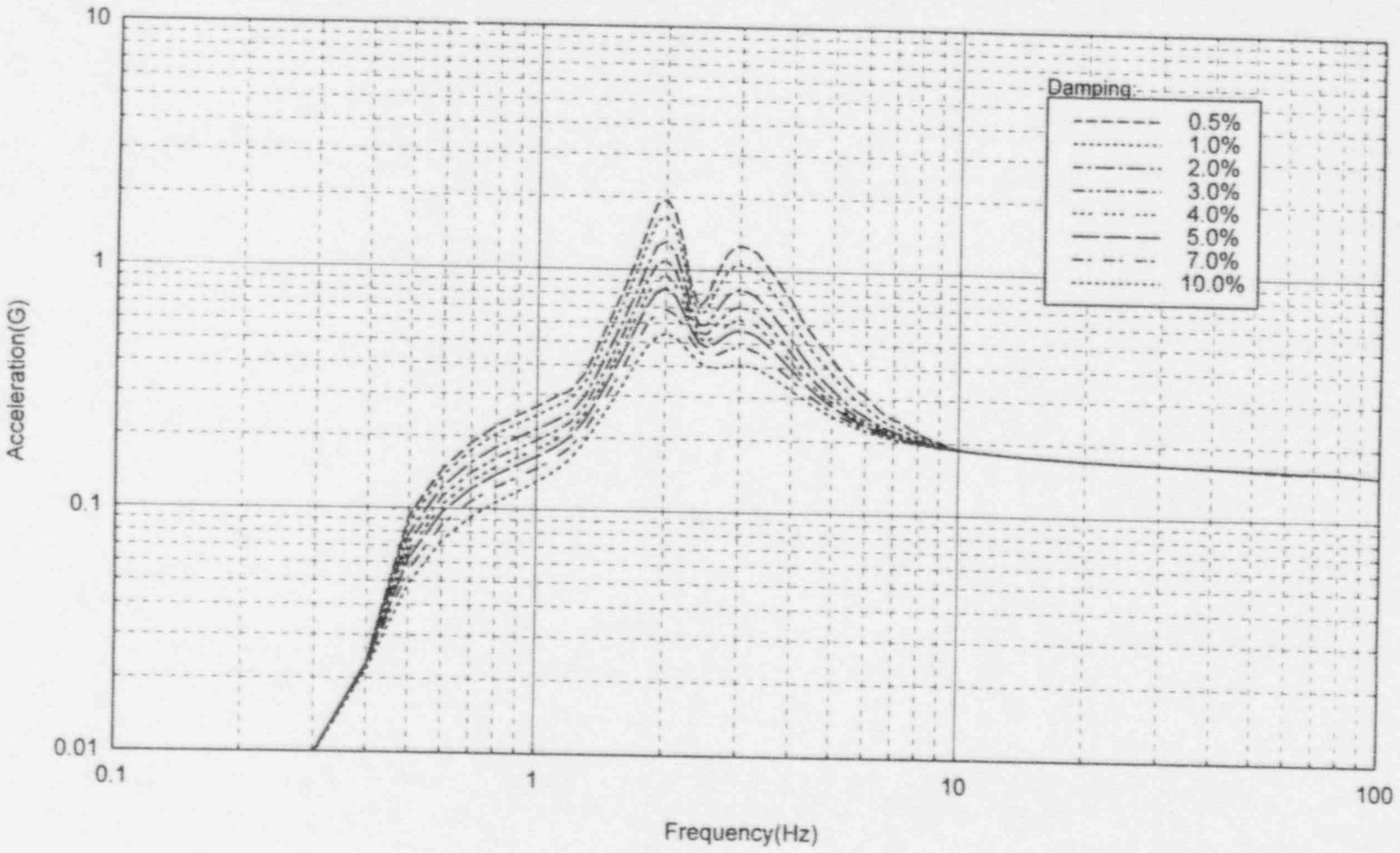
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Auxiliary (Concrete)
MASS POINTS : 31
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 715.00



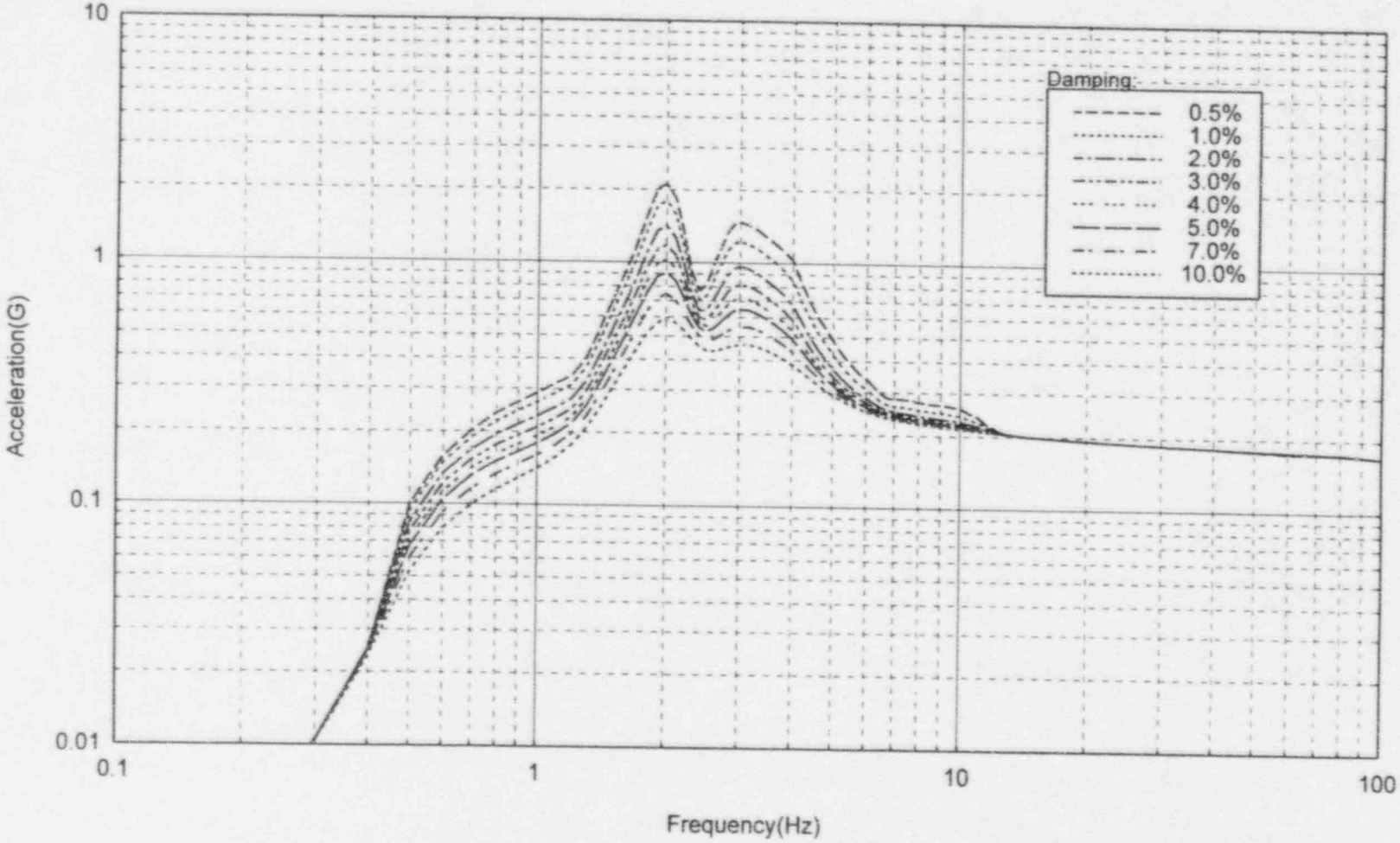
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Containment Vessel
MASS POINTS : 14, 14A
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 755.00



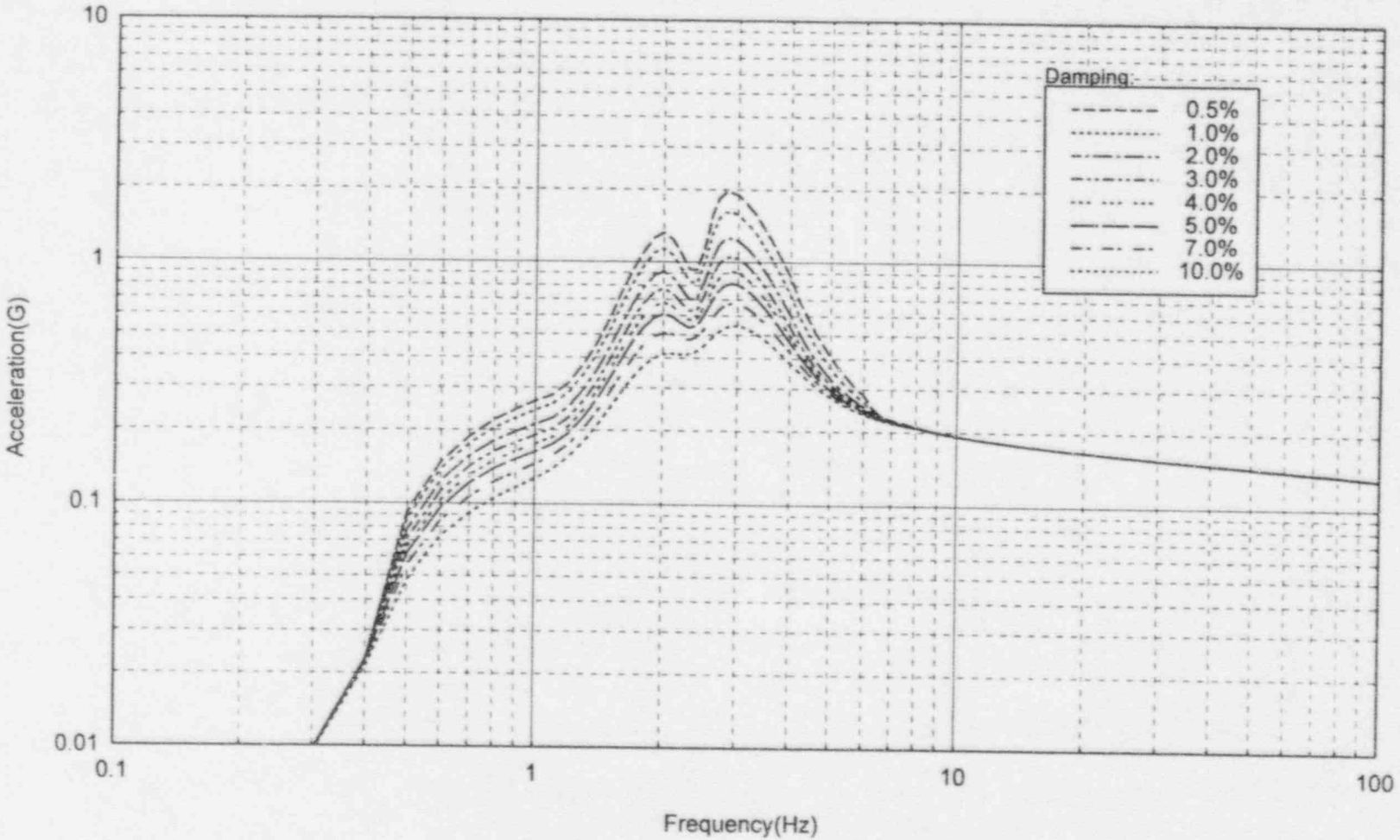
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Containment Vessel
MASS POINTS : 14, 14A
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 755.00



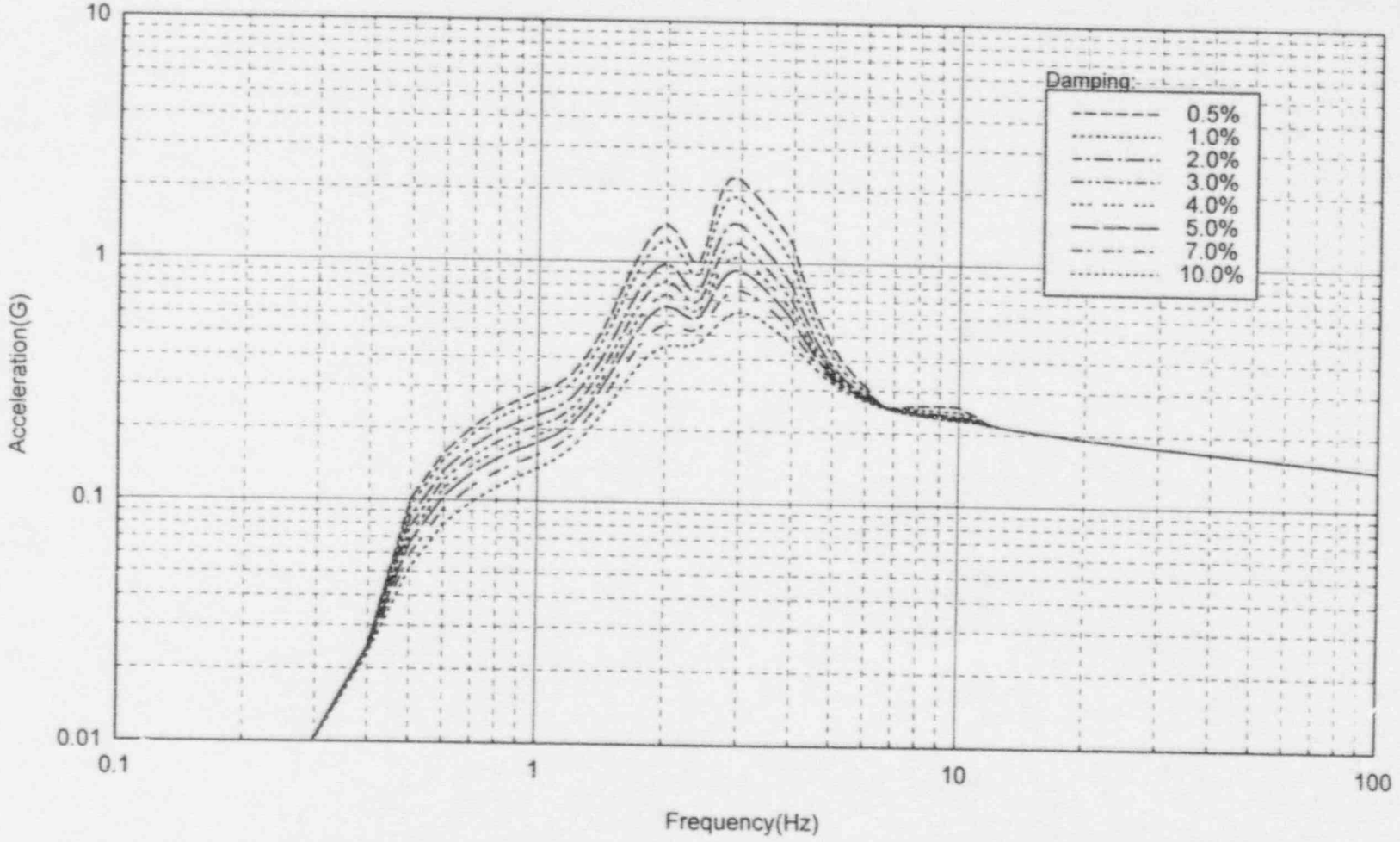
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Containment Vessel
MASS POINTS : 15, 15A
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 733.75



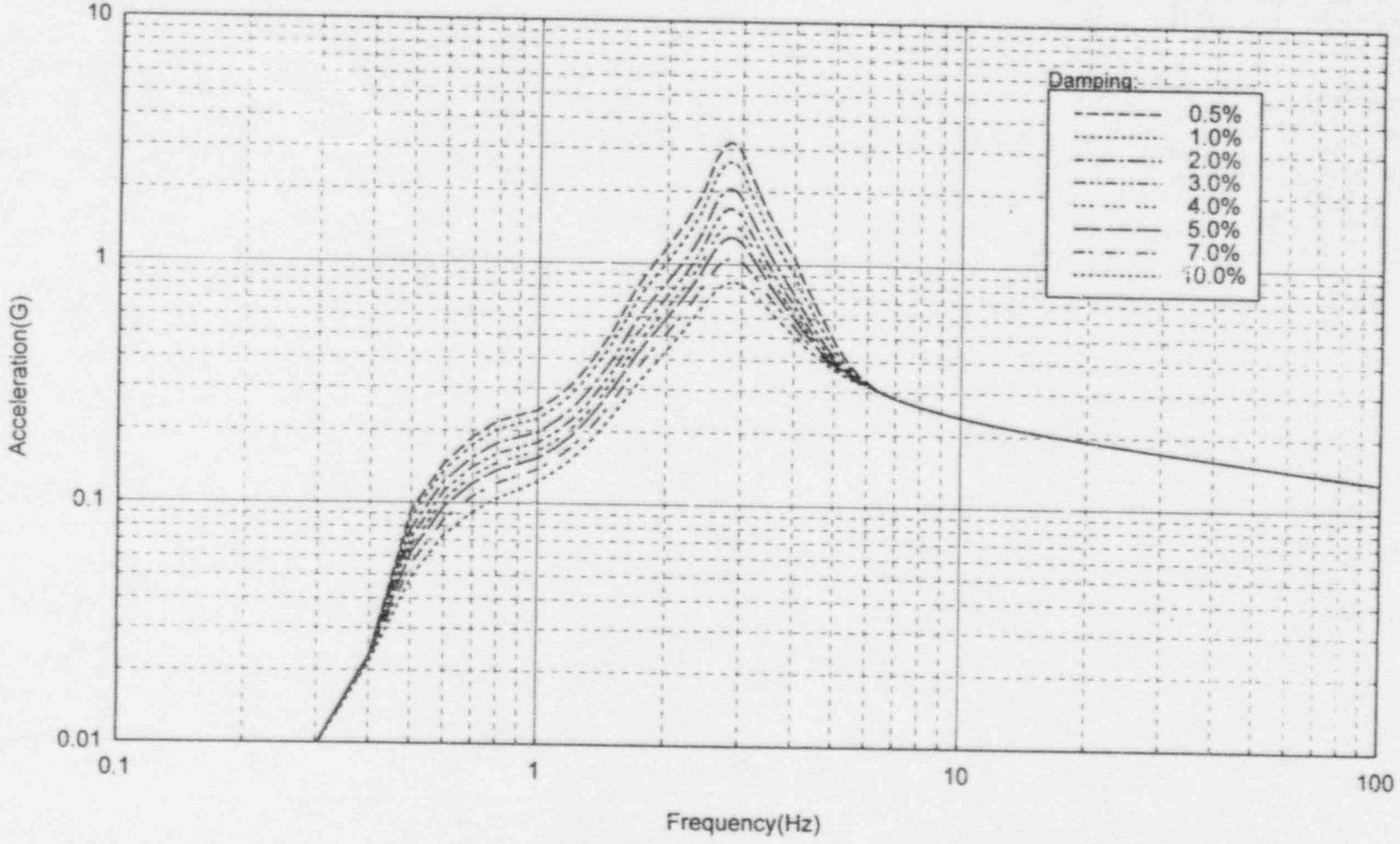
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Containment Vessel
MASS POINTS : 15, 15A
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 733.75



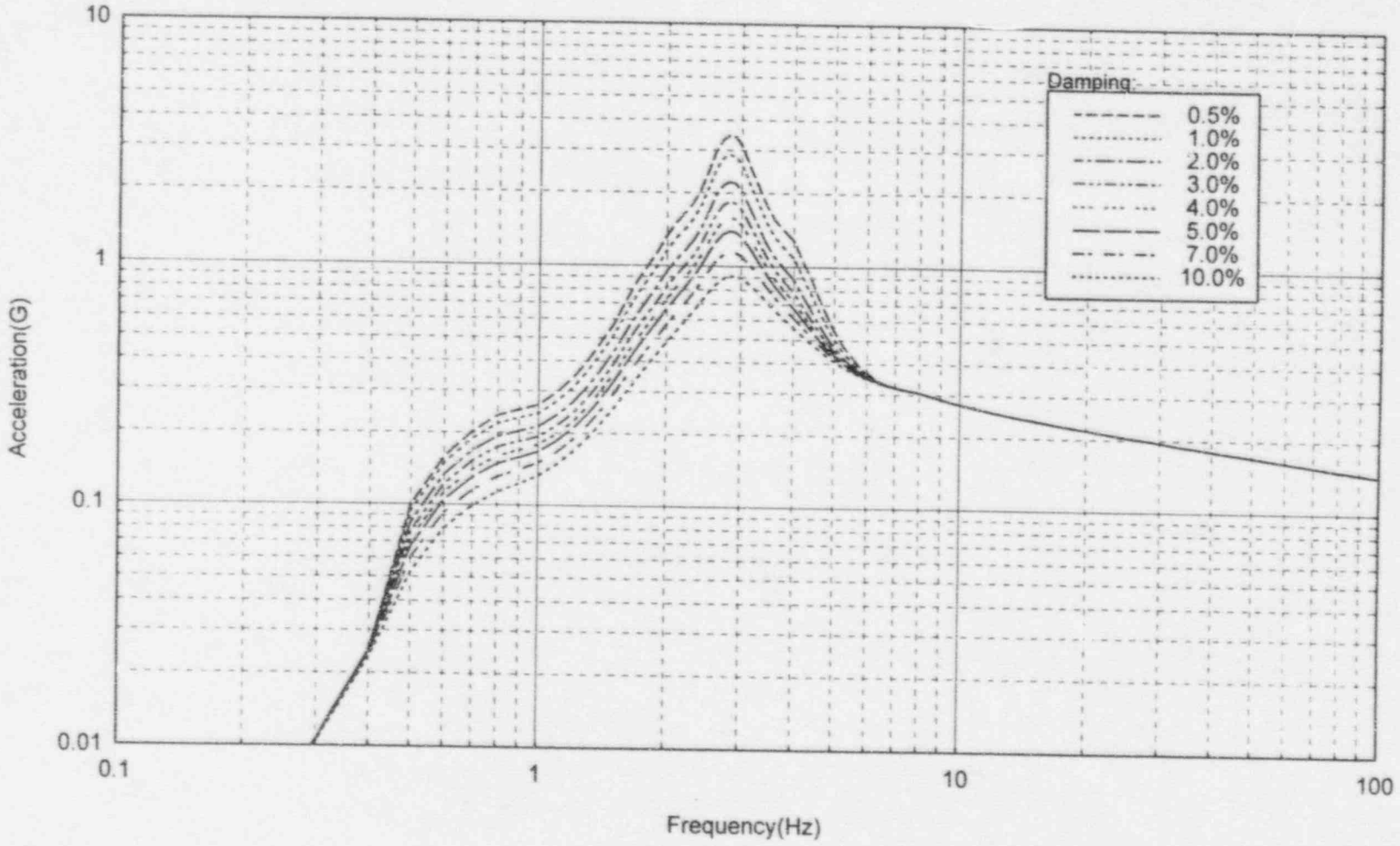
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Containment Vessel
MASS POINTS : 16, 16A
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 711.50



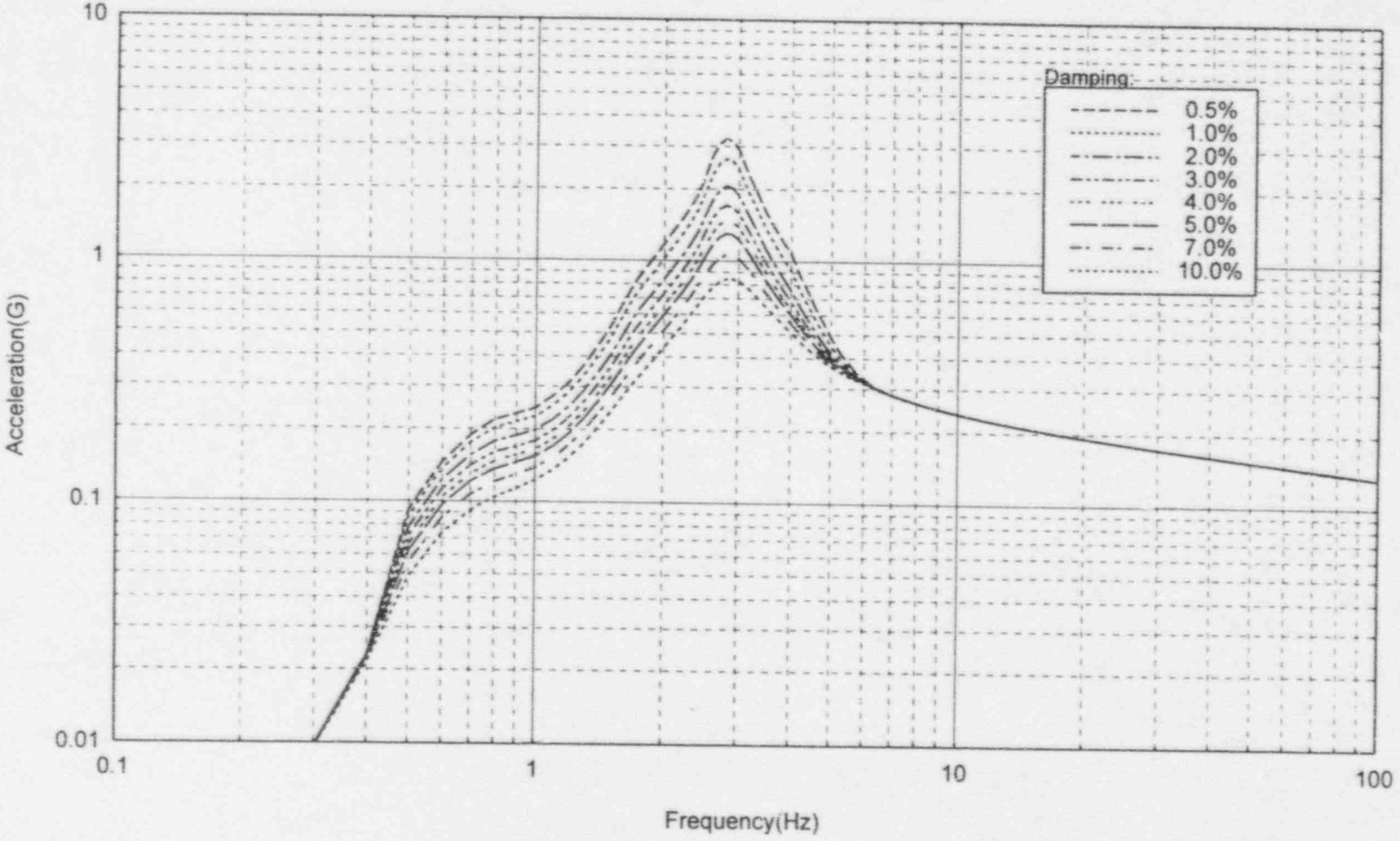
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Containment Vessel
MASS POINTS : 16, 16A
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 711.50



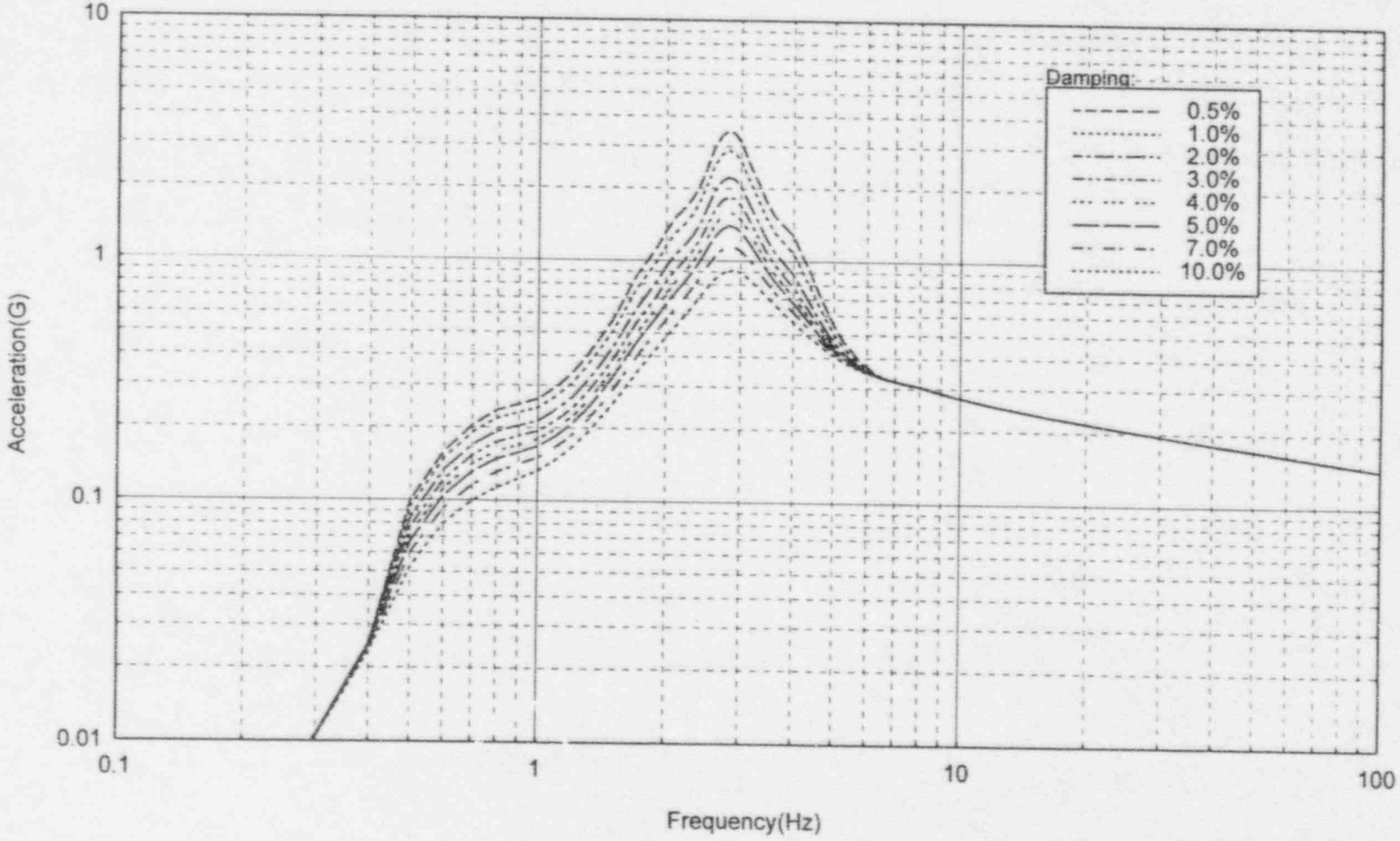
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : RB/AB/TB
MASS POINTS : 20, 20A, 32, 42
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 695.00

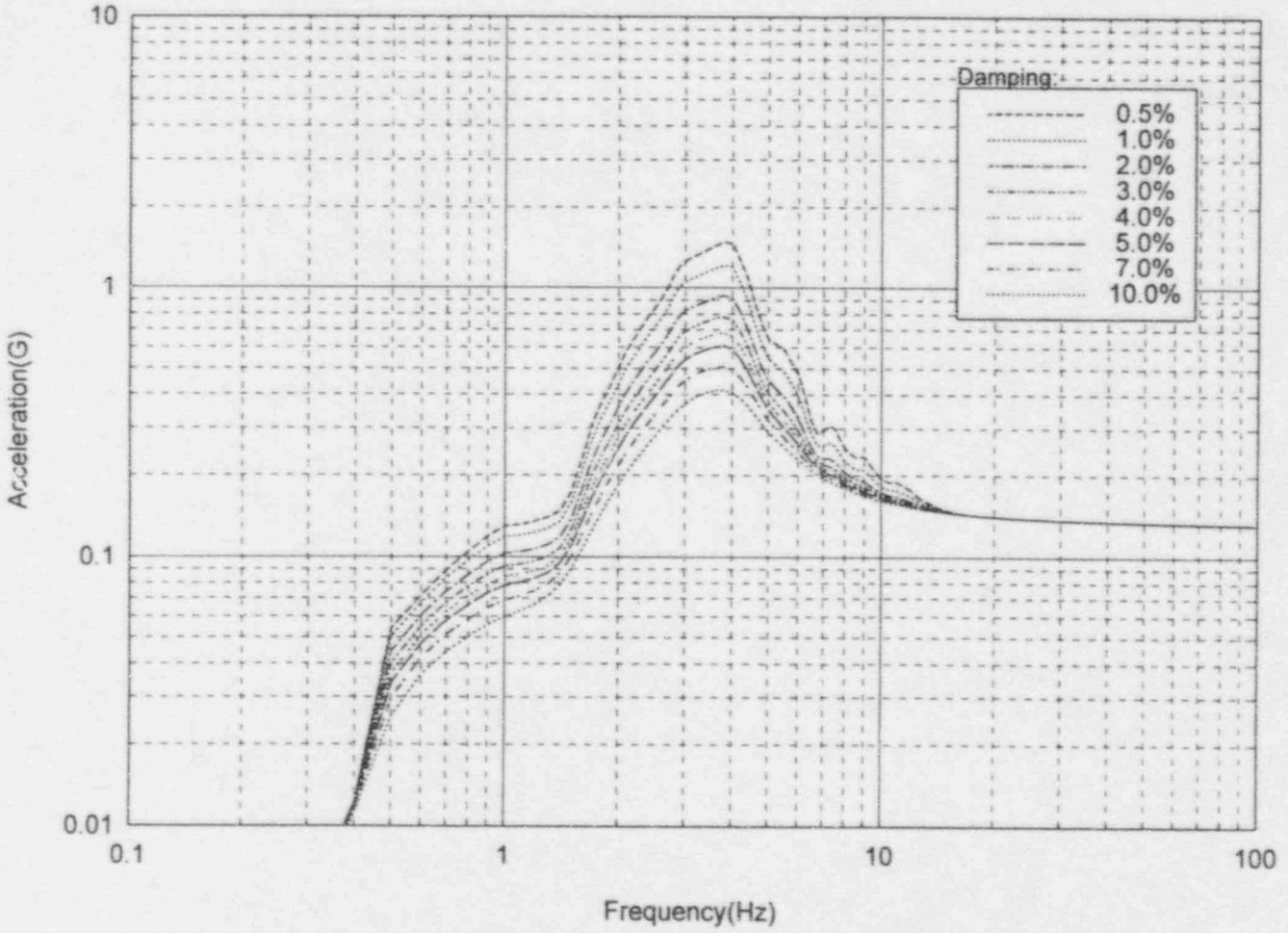


Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : RB/AB/TB
MASS POINTS : 20, 20A, 32, 42
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 695.00

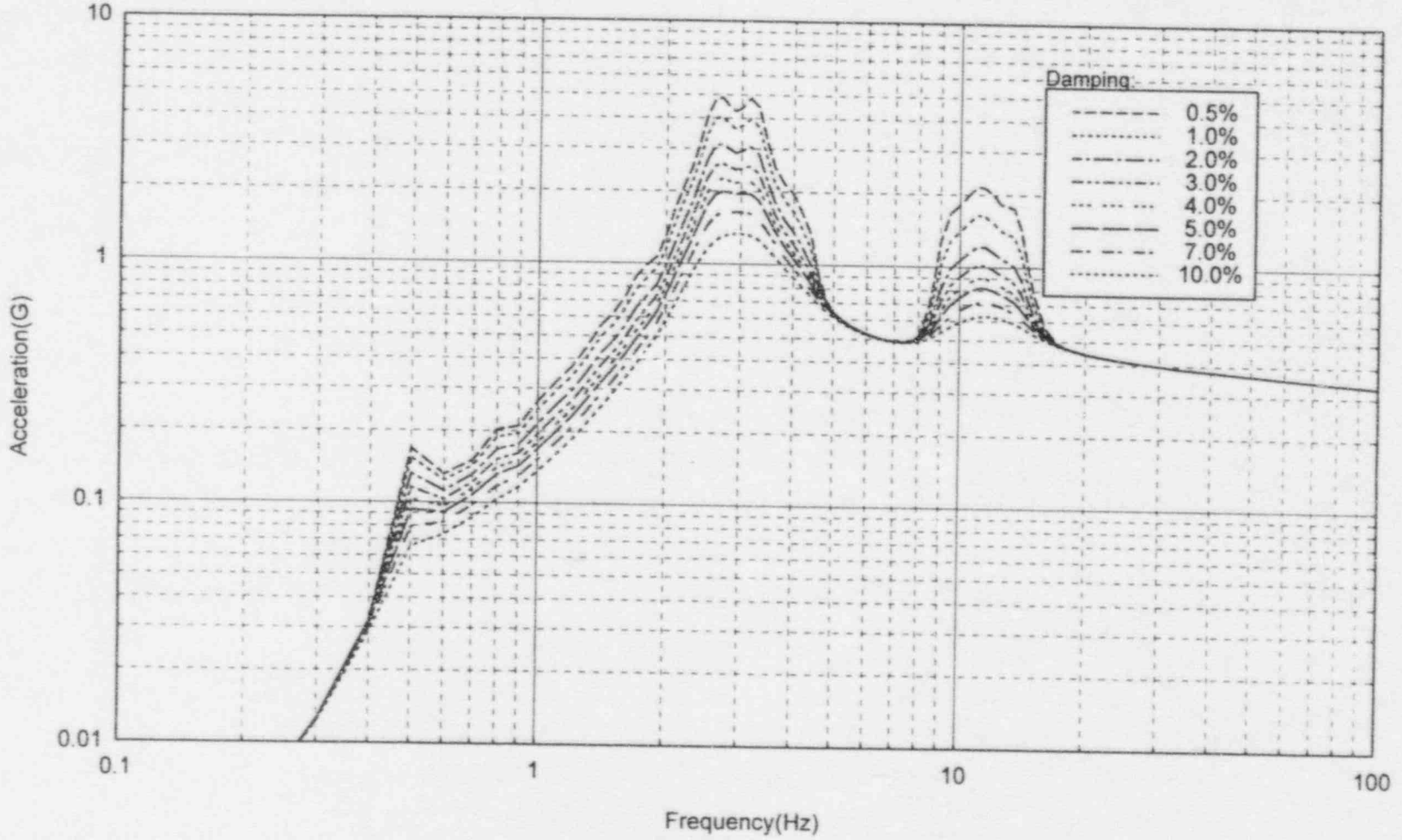


BUILDING : RB/AB/TB/TS
MASS POINTS : Ref. Table 25, JAB-PS-04
DIRECTION : VERTICAL
RADIAL DIST : N/A
ELEVATION : Varies



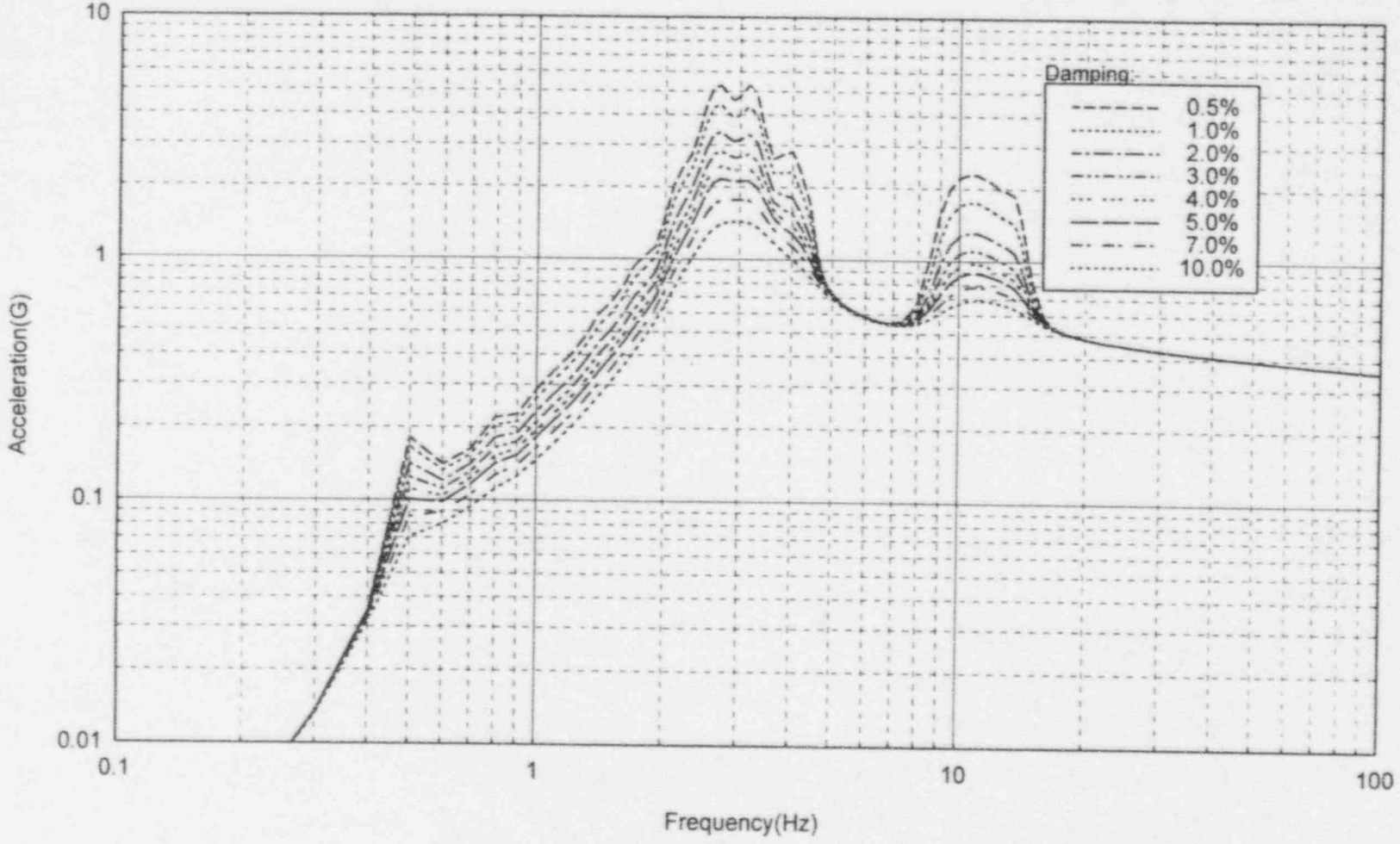
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Reactor Support
MASS POINTS : 17, 17A
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 755.00



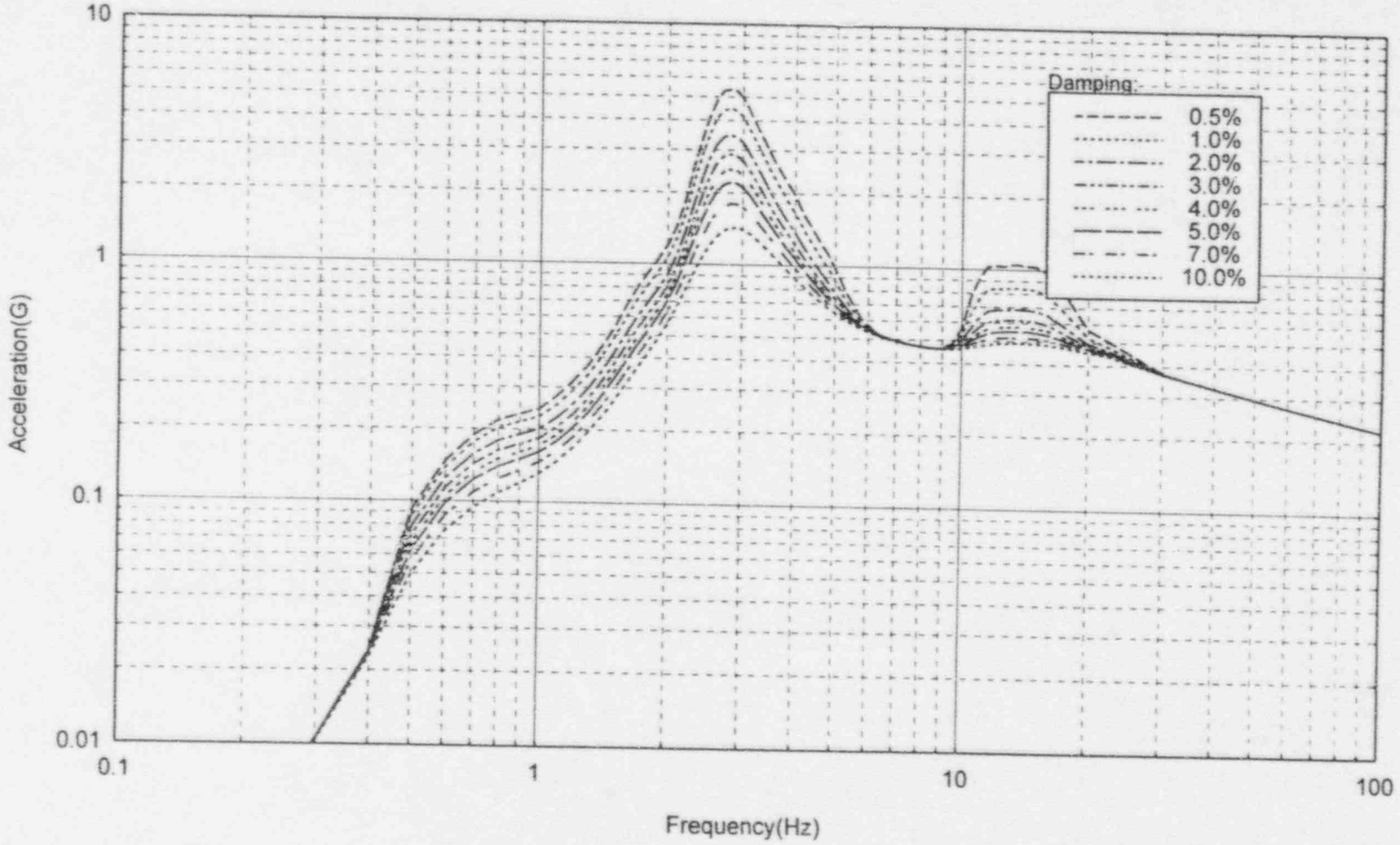
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Reactor Support
MASS POINTS : 17, 17A
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 755.00



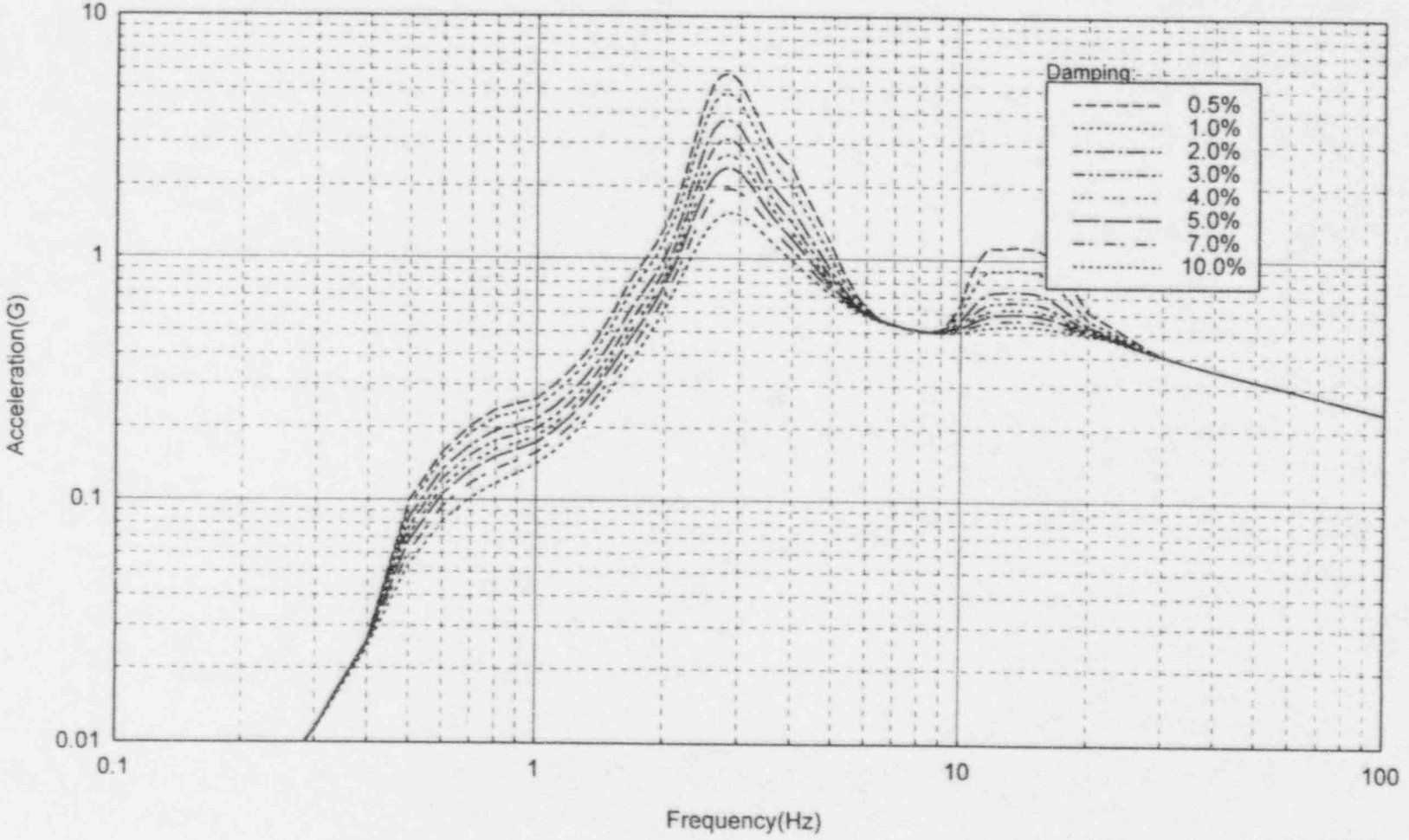
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Reactor Support
MASS POINTS : 18, 18A
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 733.75



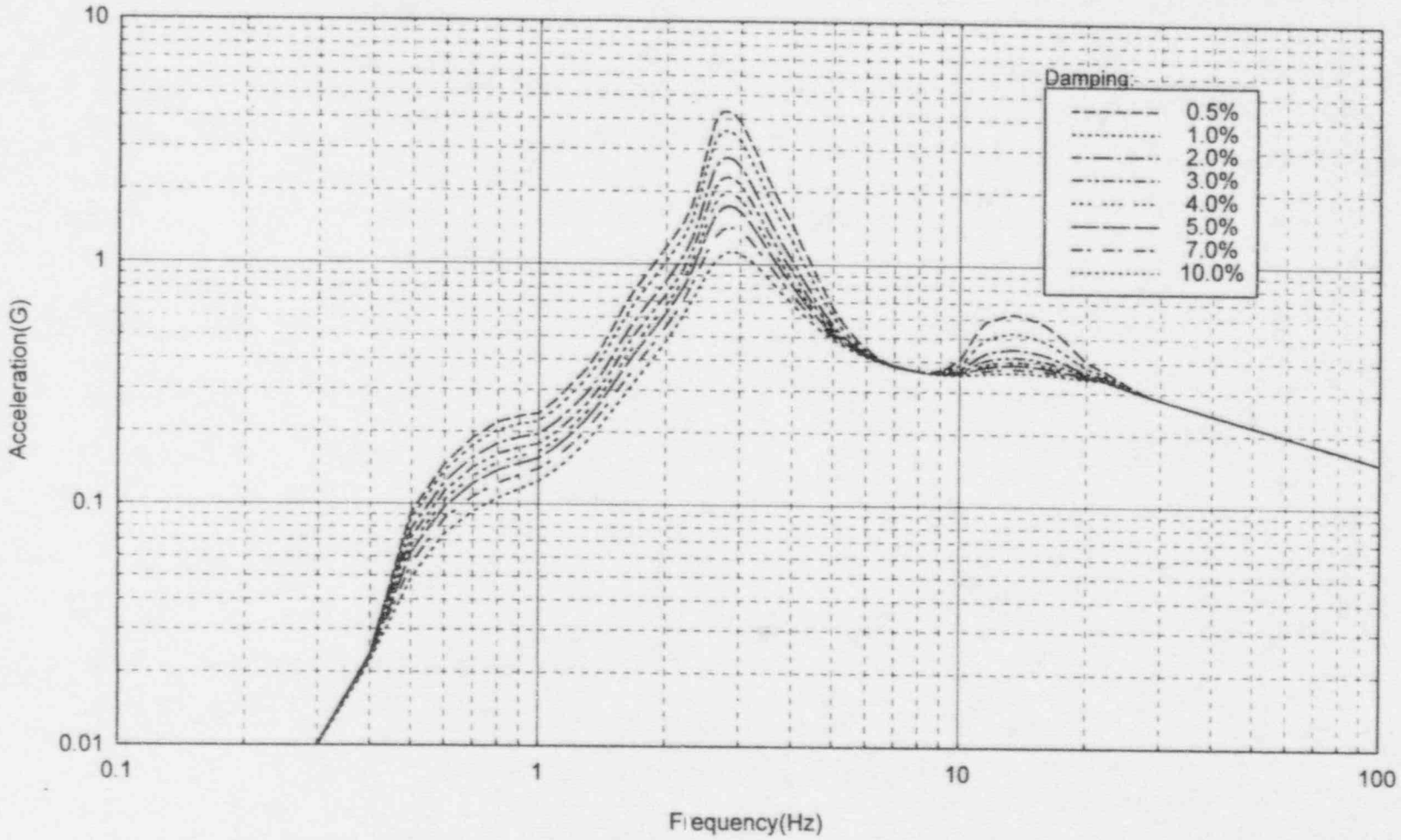
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Reactor Support
MASS POINTS : 18, 18A
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 733.75



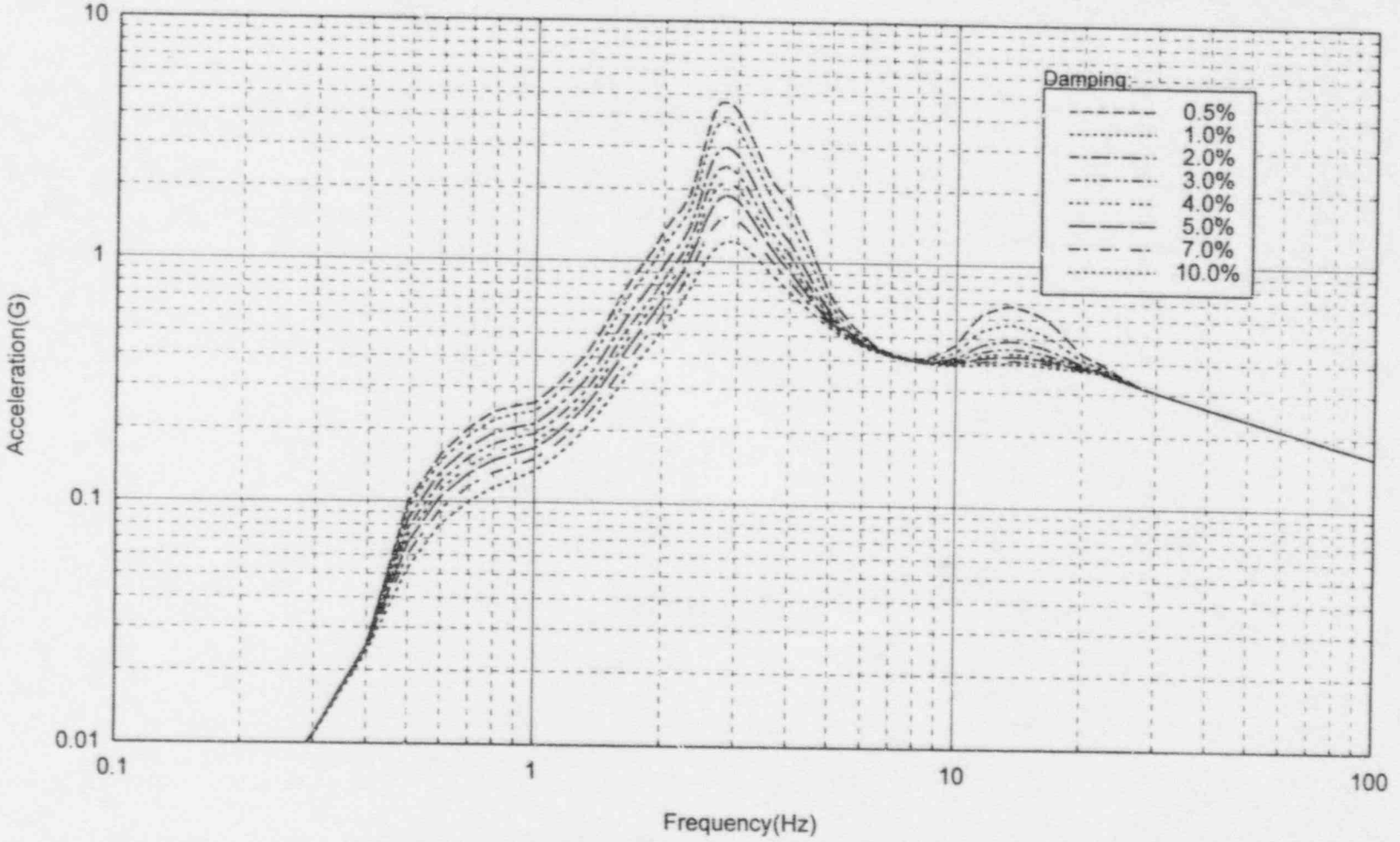
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Reactor Support
MASS POINTS : 19, 19A
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 711.50



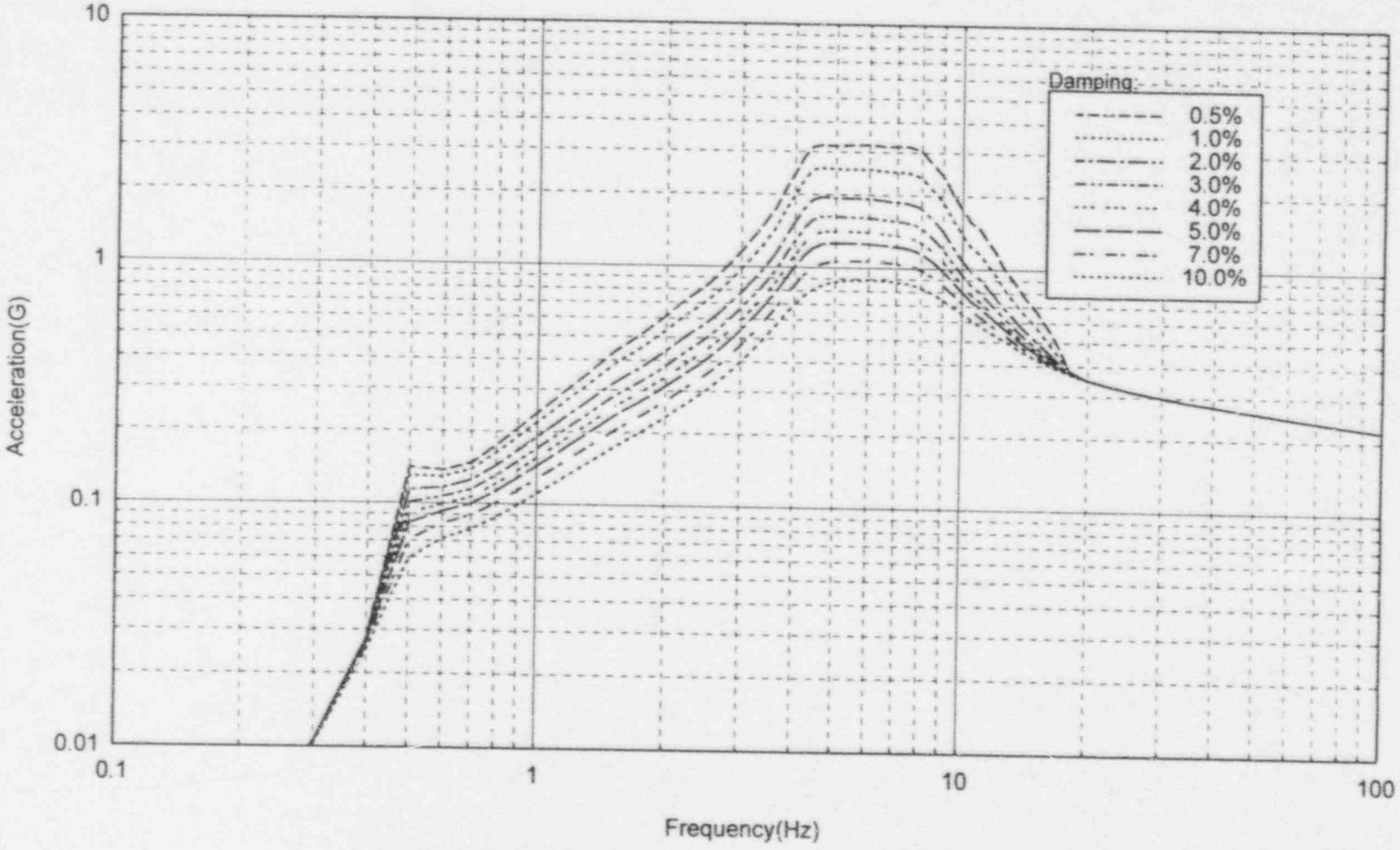
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Reactor Support
MASS POINTS : 19, 19A
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 711.50



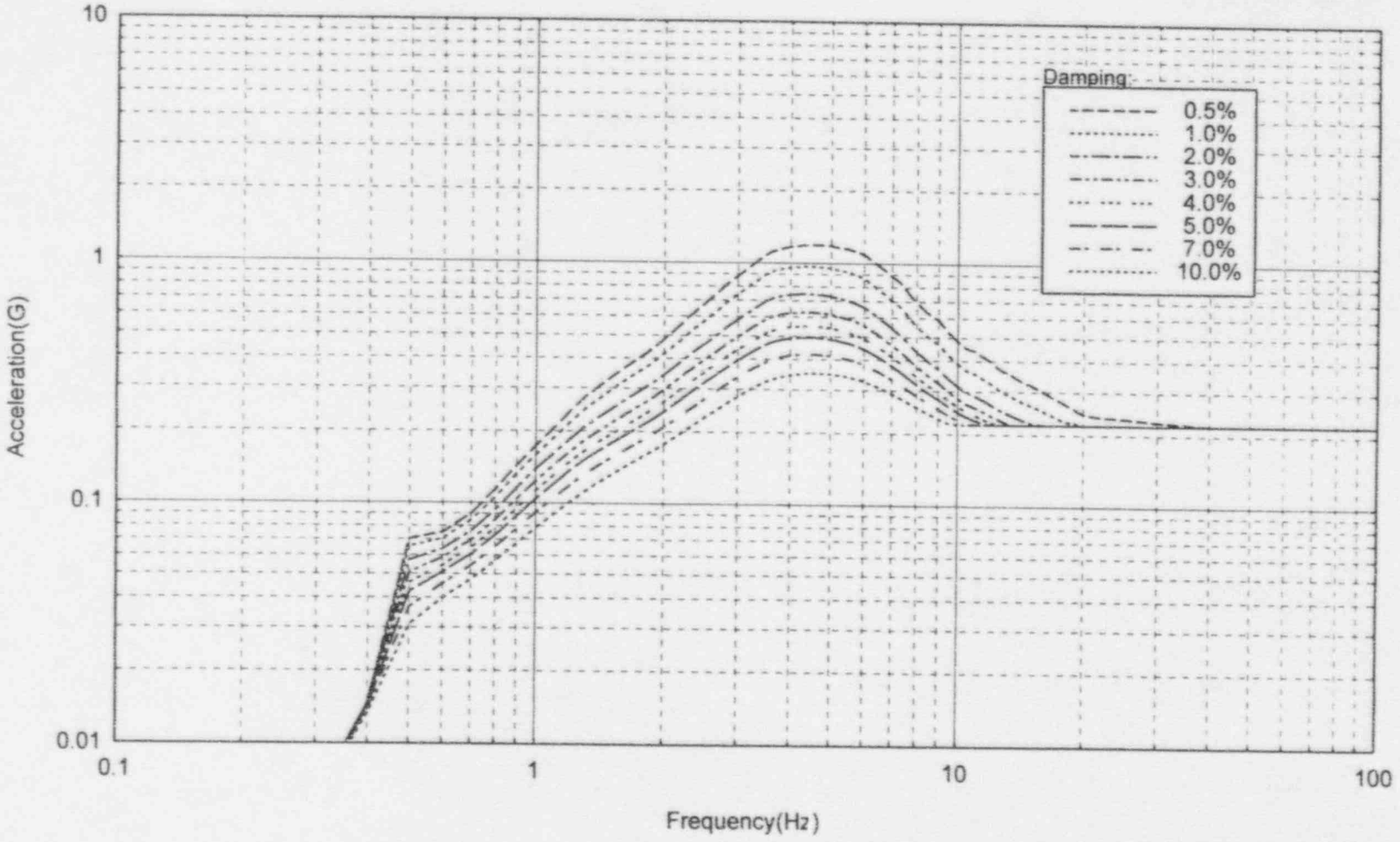
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Screen House
MASS POINTS : N/A
DIRECTION : HORIZONTAL
RADIAL DIST : All
ELEVATION : 695.00



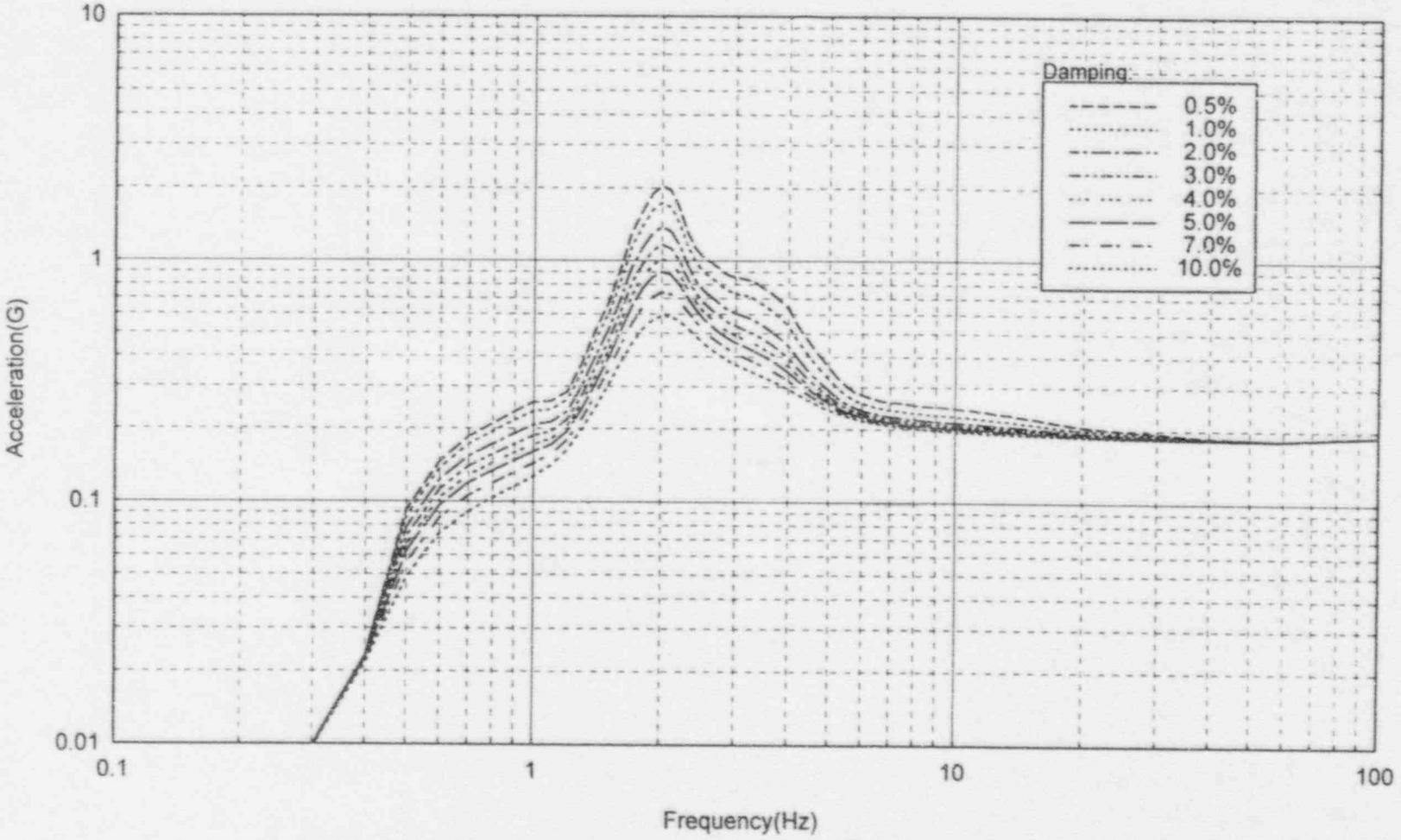
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Screen House
MASS POINTS : N/A
DIRECTION : VERTICAL
RADIAL DIST : All
ELEVATION : 695.00



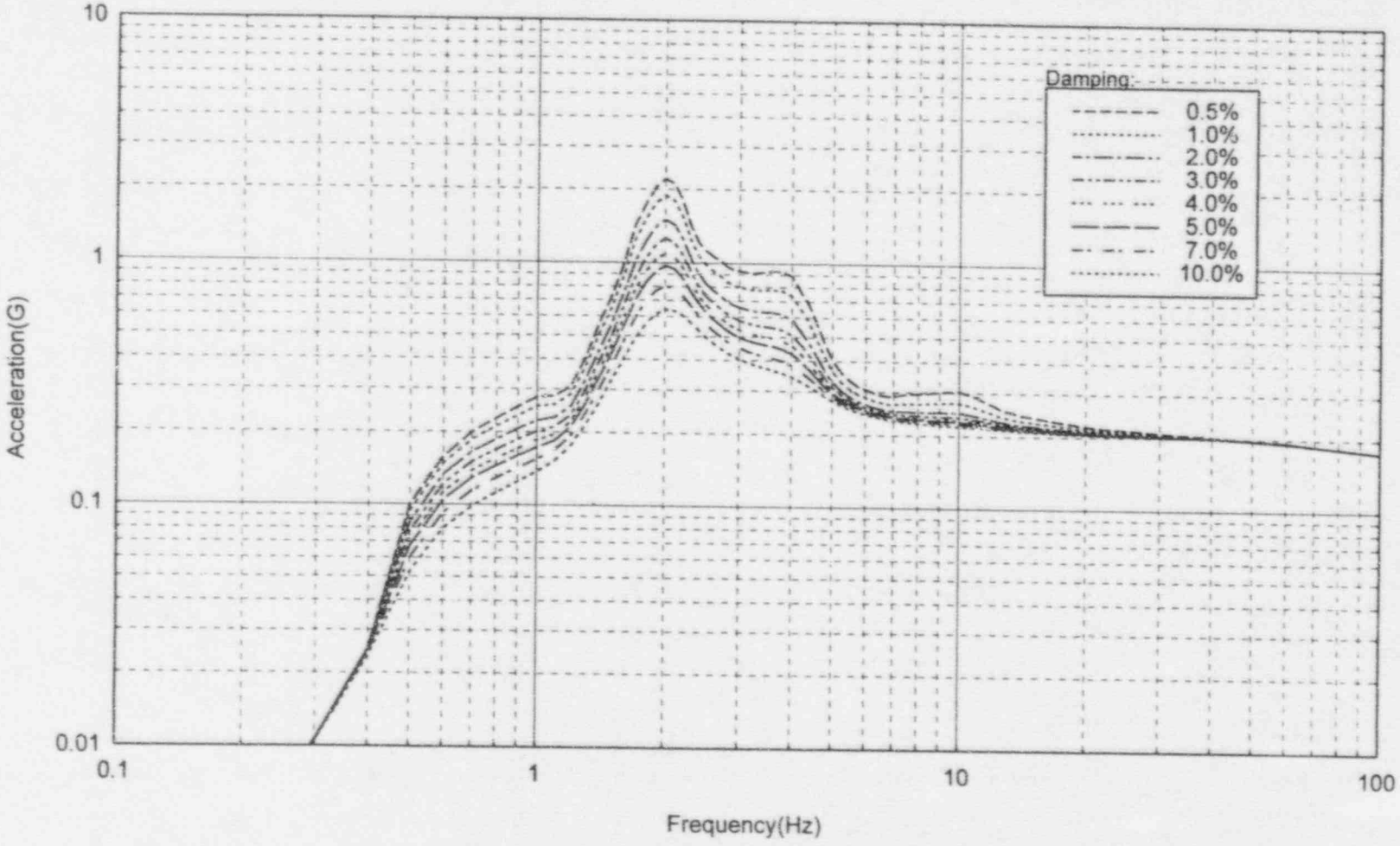
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Shield Building
MASS POINTS : 6,6A
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 755.00



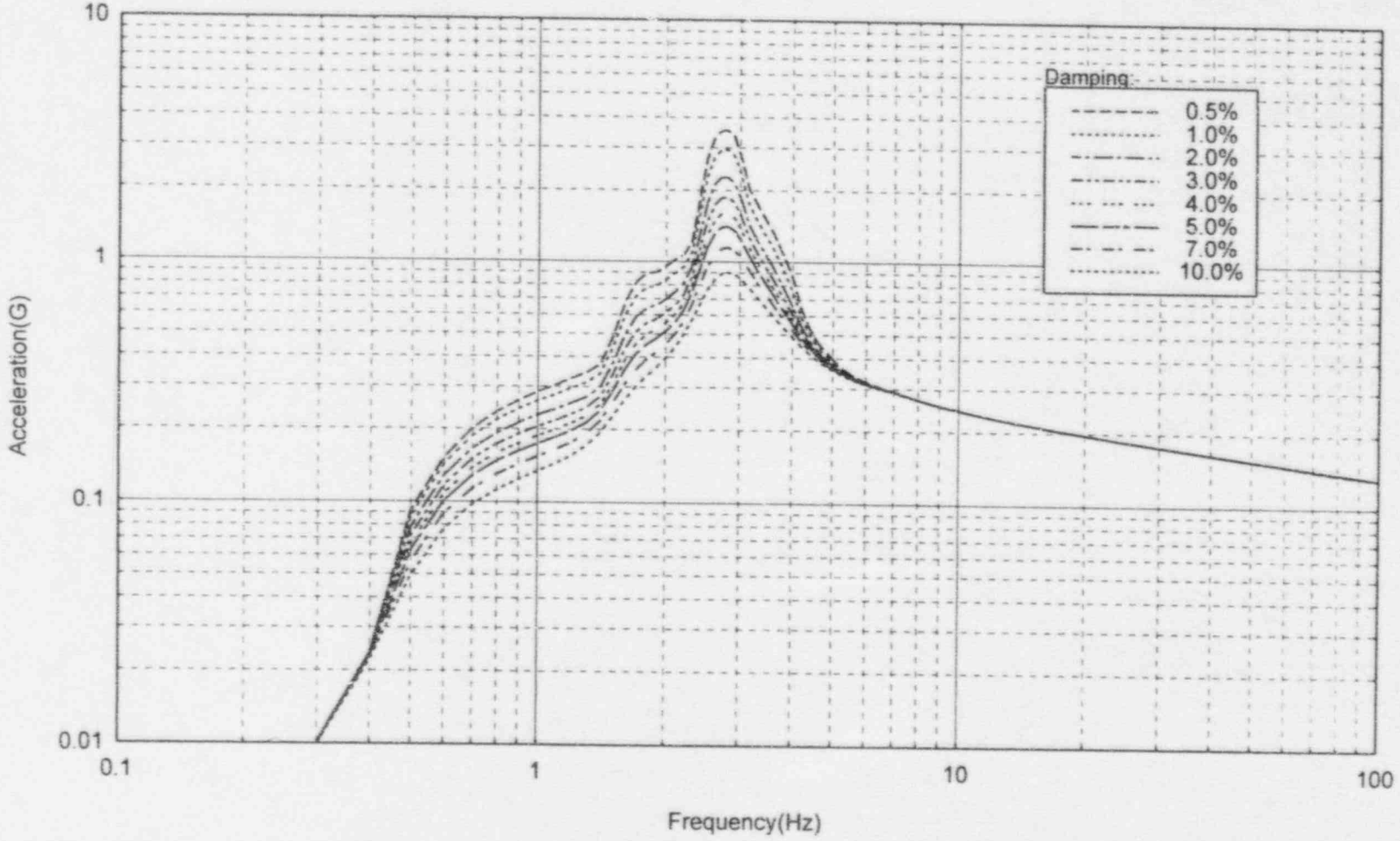
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Shield Building
MASS POINTS : 6,6A
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 755.00



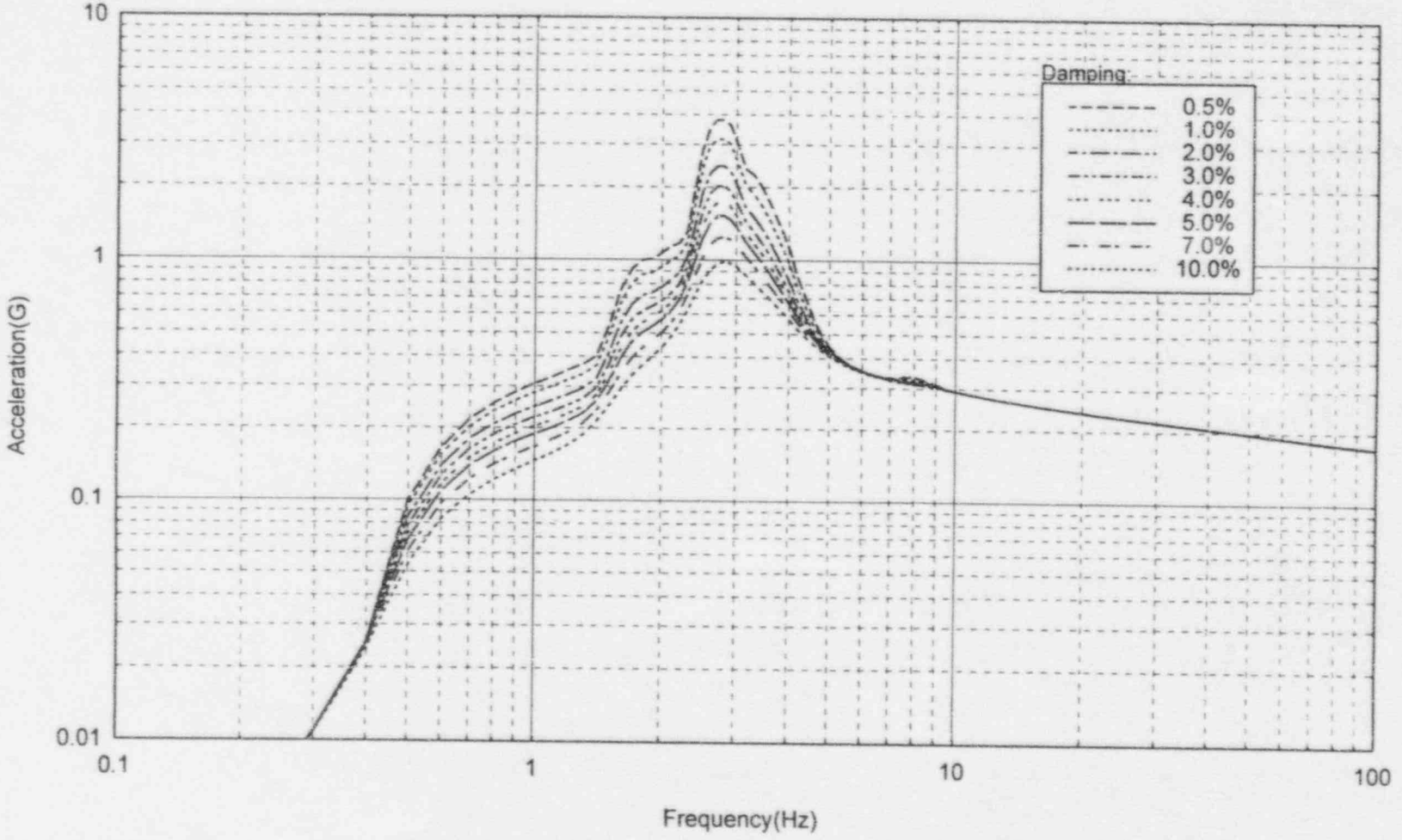
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Turbine Building
MASS POINTS : 41
DIRECTION : HORIZONTAL
RADIAL DIST : 0
ELEVATION : 715.00



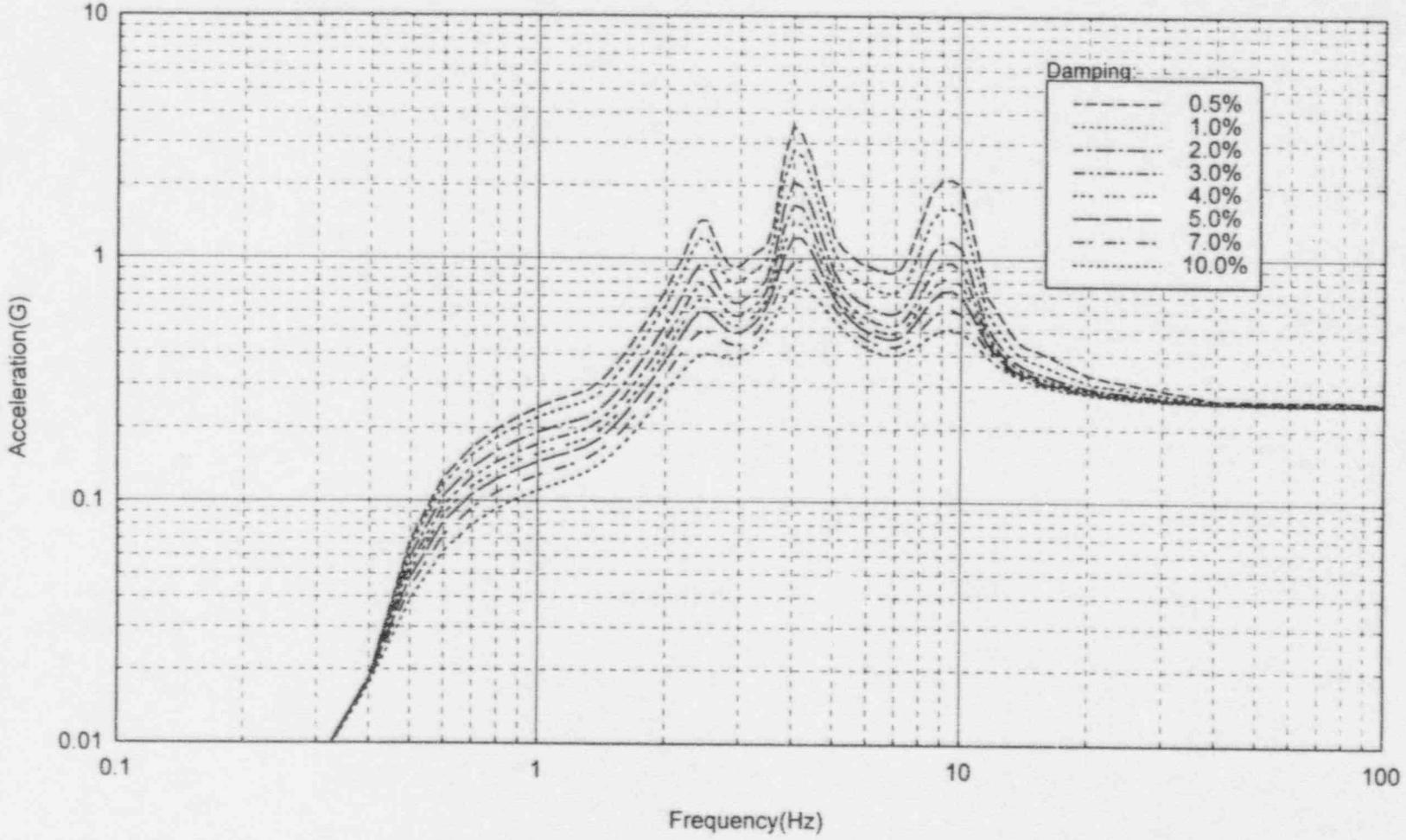
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Turbine Building
MASS POINTS : 41
DIRECTION : HORIZONTAL
RADIAL DIST : 100
ELEVATION : 715.00



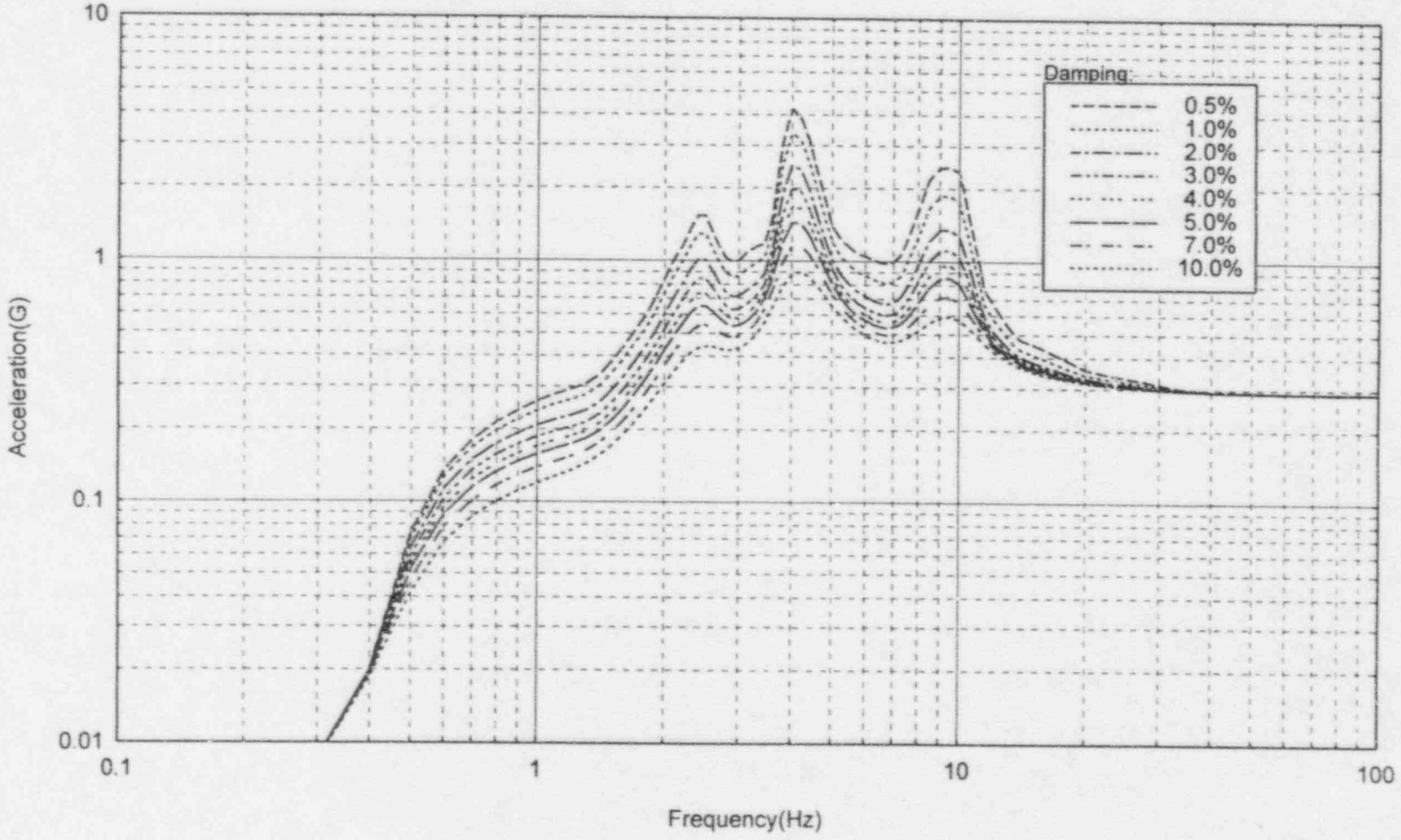
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Turbine Support
MASS POINTS : 33, 33A
DIRECTION : EAST-WEST
RADIAL DIST : 0
ELEVATION : 735.00



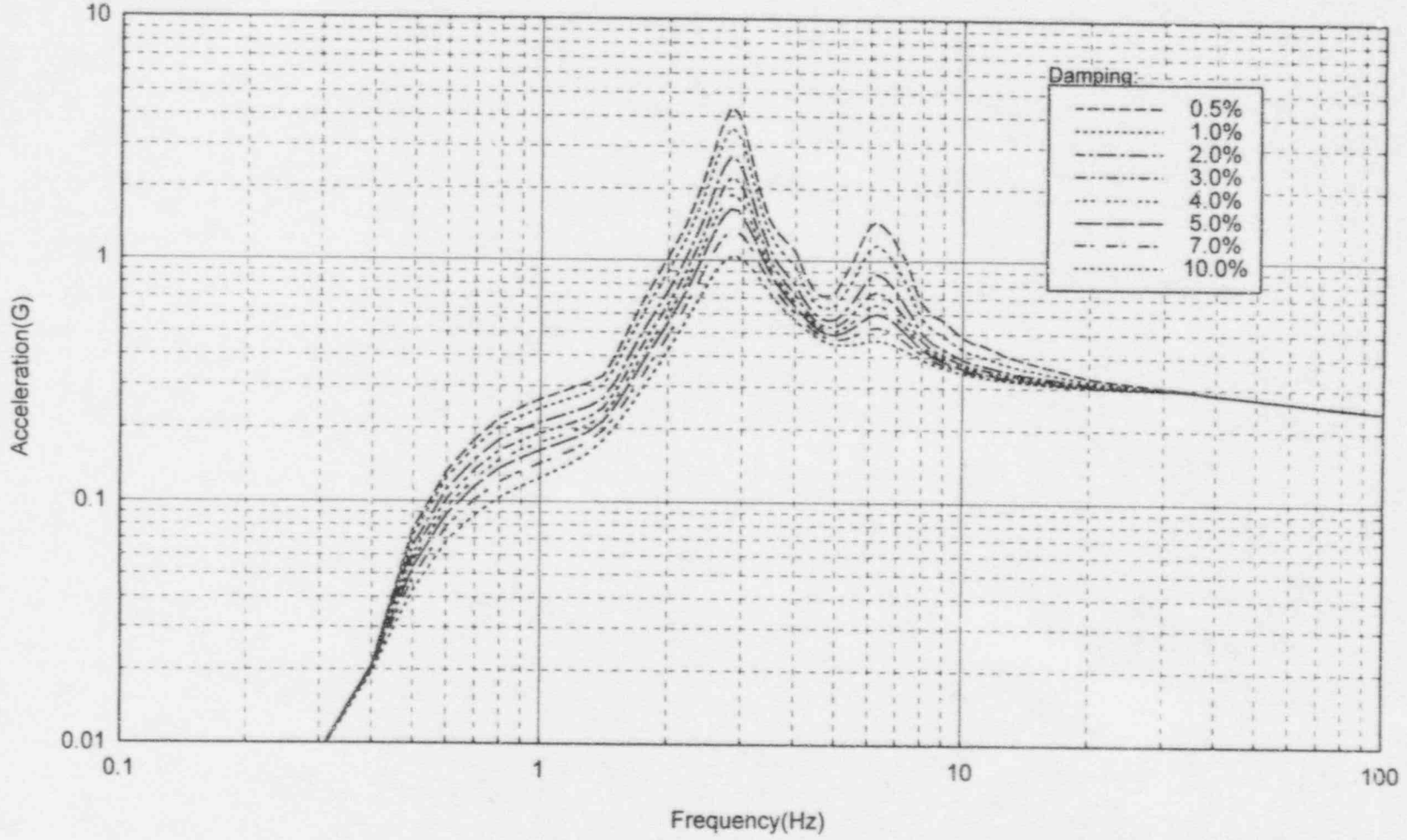
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Turbine Support
MASS POINTS : 33, 33A
DIRECTION : EAST-WEST
RADIAL DIST : 100
ELEVATION : 735.00



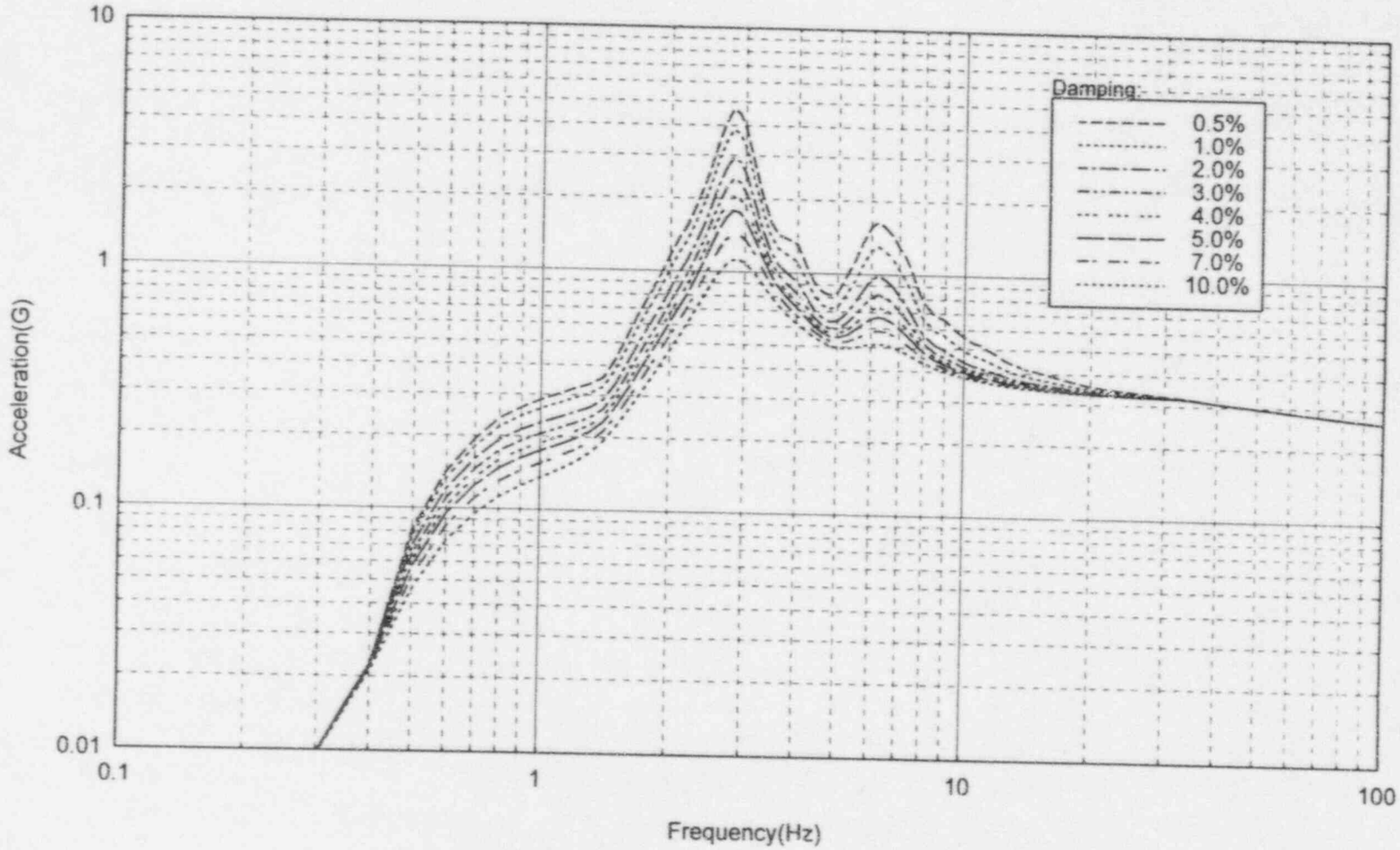
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Turbine Support
MASS POINTS : 33, 33A
DIRECTION : NORTH-SOUTH
RADIAL DIST : 0
ELEVATION : 735.00



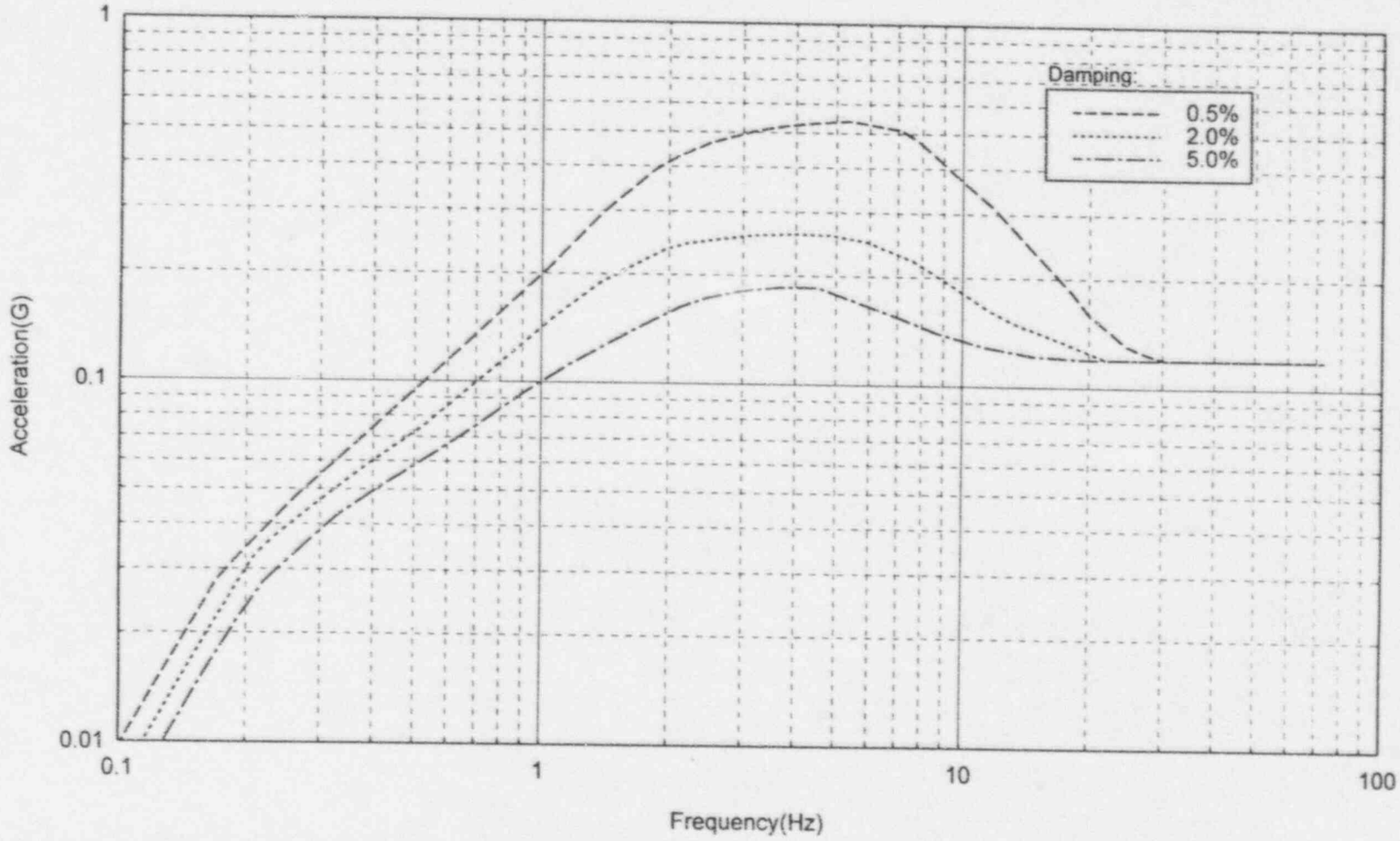
Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : Turbine Support
MASS POINTS : 33, 33A
DIRECTION : NORTH-SOUTH
RADIAL DIST : 100
ELEVATION : 735.00



Northern States Power Company
Prairie Island Nuclear Generating Plant
Amplified Floor Response Spectra
Safe Shutdown Earthquake (SSE)

BUILDING : GROUND
MASS POINTS : N/A
DIRECTION : HORIZONTAL
RADIAL DIST : N/A
ELEVATION : 695.00



Appendix C: Walkdown Personnel Resumes

SQUG

Certificate of Achievement

This is to Certify that

Gerald David Gore

has Completed the SQUG Walkdown Screening
and Seismic Evaluation Training Course
Held May 3-7, 1993

Neil P. Smith, Commonwealth Edison
SQUG Chairman

David A. Freed, MPR Associates
SQUG Training Coordinator

Robert P. Kassawara, EPRI
SQUG Program Manager

PRACTICAL AND PROFESSIONAL EXPERIENCE
Resume for Gerald Gore

EXPERIENCE

July 76 to Feb 81
Hanna Mining Co
Hibbing MN (The remaining open operation is at Keewatin as National Steel Pellet co.)
Work locations included Butler Taconite, National Steel Pellet Co. and Hanna's District office.
Work experience included: Mine planning estimating and layout,(as Junior Mining Engineer under a Senior Mining Engineer) drilling and blast pattern design, blasting noise and seismic monitoring, evaluation of blast damage claims, drill bit failure/economic analysis, and drilling equipment specification (as a drilling and blasting engineer reporting to the Lead Mining Engineer).

Oct 1981 to Oct 1995
Northern States Power (Prairie Island Nuclear Generating Plant).
Latest 18 months as acting superintendent of Civil and Mechanical Engineering for the Nuclear Projects group. Previous 2 1/2 years as Project Engineer for the Nuclear Projects Group (Projects include: Installation of fire penetrations and equipment, 24 and 30" cooling water (service water) header replacement and hydraulic modeling), and 10 Years as system engineer for the Prairie Island Nuclear Generating Plant (As system engineer responsible for operations support, maintenance and modification coordination of the following systems: Safety Injection, Coordinator for Safety Injection suction line replacement, Condensate, Feedwater, Heater Drains, Reactor Make up Water, Station Air, Snubbers (seismic and event type), Station Turbine Generator systems and the Motor Operated Valves program).

OTHER

Member of Utility User Groups for Prairie Island Nuclear Generating Plant: Snubber user group (SNUG thru 1990) and MOV (Motor Operated Valve group in 1991) .
Completed NSP SRO License Certification Program.
Passed Minnesota EIT test.
Completed EPRI A46 Walk Down (SQUG) training for Seismic Capable Engineers.
Also previously certified in Weld Inspection and ASME Visual testing VT 1,2,3,4 level 3. Currently certified in Local Leak Rate Testing and Visual Testing VT 2 level 2.
Present member of the Prairie Island Emergency Response Organization.

SQUG

Certificate of Achievement

This is to Certify that

Mark W. McKeown

has Completed the SQUG Walkdown Screening
and Seismic Evaluation Training Course
Held May 3, 1993

Neil P. Smith, Commonwealth Edison
SQUG Chairman

David A. Freed, MPR Associates
SQUG Training Coordinator

Robert P. Kassawara, EPRI
SQUG Program Manager

Mark V. McKeown

EDUCATION:

Tufts University, Medford, MA — May 1982
Bachelor of Science in Civil Engineering and Geology

Part time graduate studies in Civil Engineering at University of New Hampshire, Tufts University, and University of Lowell.

PROFESSIONAL WORK EXPERIENCE:

Northern States Power Co., Prairie Island Nuclear Generating Plant
Senior Civil Engineer — June 1991 - present

Lead project engineer for on-site dry fuel storage activities. Responsible for fabrication activities, loading and transfer operations.
Provide engineering and project management support to plant construction projects, including cost assessment, scheduling and coordination of A/E activities. Project responsibilities included upgrading a 125 ton bridge crane ($3M) and developing a structural/seismic verification walkdown process for site implementation. Additional responsibilities include supporting Operation and System engineers by performing design and analysis; esp. structures, piping, pipe supports and component supports and electrical supports.

Civil Engineer — June 1989 - June 1991

Responsibilities include developing technical responses to NRC inquiries, provide engineering support to a variety of plant design changes, participate as a group leader in EPRI Technical Working Group for industry wide procurement evaluations. Daily use of word processing and spreadsheet applications

Teledyne Engineering Services, Waltham, MA
Project Engineer — June 1982 - June 1989

Responsibilities included project management of jobs from $5K - $1M, sales and marketing at various electric utilities and proposal writing. Evaluation and field engineering associated with the design of nuclear and fossil power piping systems under static and dynamic loads. Stress analyses of frames and components using finite element techniques and requiring knowledge of various computer codes.

Project work included:

- Interface between Architect-Engineer and electric utility on $1 million piping upgrade project. As responsible engineer I managed scheduling, documentation, and developed construction work packages.
- Design review of a waste to energy facility's major structures which could impact safety of personnel, including columns, reinforced pushwalls & explosion chambers.
- Provided onsite engineering for the structural design and review of cable tray and conduit supports during construction of Seabrook Power Station.

OTHER WORK EXPERIENCE:
Prairie Island SRO Certification - November 1993

MEMBERSHIPS:
Registered Professional Engineer, Minnesota
American Society of Civil Engineers - Associate Member

SQUG

Certificate of Achievement

This is to Certify that

Greg Ridder

has Completed the SQUG Walkdown Screening
and Seismic Evaluation Training Course
Held June 22-26, 1992

Neil P. Smith, Commonwealth Edison
SQUG Chairman

David A. Freed, MPR Associates
SQUG Training Coordinator

Robert P. Kassaware, EPRI
SQUG Program Manager

GREGORY C. RIDDER
Nuclear Power Department
Wisconsin Public Service Corporation

EDUCATION

University of Nebraska - Lincoln Lincoln, NE

Master of Science degree in Agricultural Engineering, Dec. 1989.
(Emphasis of studies were in civil and mechanical engineering).

Other Training

Completed Shift Technical Advisor training in academics and plant systems at the Kewaunee Nuclear Power Plant (KNPP). Jan. 1991 to Dec. 1991.

RELEVANT WORK EXPERIENCE

Wisconsin Public Service Corporation Green Bay, WI

Nuclear Engineer August 1990 to Present

- Project management of the USI A-46 project at KNPP. Specific responsibilities include; planning and scheduling of project tasks, management and coordination of contracted engineering work, performance of technical evaluations, development of procedures, project budgeting, and preparation of project reports.
- Seismic structural analyses of new and existing equipment installations.
- Engineering support for plant design changes.

Applied Power Associates, Inc. Omaha, NE
Architects, Engineers, Consultants

Civil/Structural Engineer May 1989 to August 1990

- Structural steel and reinforced concrete design and analysis for a multi-story office building.
- Consulting engineer to Nebraska Public Power District, Cooper Nuclear Station. Responsibilities included seismic analysis and design of equipment installations, provided on-site engineering support to work crews during installation of new ductwork and conduit hanger installations at the Cooper plant.
- Consulting engineer to Omaha Public Power District, Fort Calhoun Nuclear Plant. Performed power plant design change work related to building structural modifications.
- Performed design and analysis work for modifications to a fly-ash handling system for the Iowa Power and Light Company.

SQUG

Certificate of Achievement

This is to Certify that

Walter Djordjevic

has Completed the SQUG Walkdown Screening
and Seismic Evaluation Training Course
Held April 6–10, 1992

David A. Freed, MPR Associates
SQUG Training Coordinator

Neil P. Smith, Commonwealth Edison
SQUG Chairman

R. P. Kassawara, EPRI
SQUG Program Manager

WALTER DJORDJEVIC

EDUCATION:

B.S. - Civil Engineering, University of Wisconsin at Madison, 1974
M.S. - Structural Engineering, Massachusetts Institute of Technology, 1976

REGISTRATION:

State of California, State of Wisconsin, Commonwealth of Massachusetts, State of Michigan

PROFESSIONAL HISTORY:

Stevenson & Associates, Inc., Vice President and General Manager of the Boston area office, 1983 - present
URS/John A. Blume & Associates, Engineers, Boston, Massachusetts, General Manager, 1980 - 1983; San Francisco, California, Supervisory Engineer, 1979 - 1980
Impell Corporation, San Francisco, California, Senior Engineer, 1976 - 1979
Stone & Webster Engineering Corporation, Boston, Massachusetts, Engineer, 1974 - 1976

PROFESSIONAL EXPERIENCE:

Mr. Djordjevic founded the Stevenson & Associates Boston area office in 1983 and serves as Vice President and General Manager. He is currently preforming numerous seismic walkdowns for resolution of the USI A-46 and seismic IPEEE issues, and serving as the Project Manager for the Kewaunee, Point Beach and Palisades projects, all joint A-46 and Seismic PRA projects.

Mr. Djordjevic is expert in the area of seismic fragiity analysis and dynamic qualification of electrical and mechanical equipment. He has participated in and managed over twenty major projects involving the evaluation and qualification of vibration sensitive equipment and seismic hardening of equipment. As demonstrated by his committee work and publications, Mr. Djordjevic has participated in and contributed steadily to the development of equipment qualification and vibration hardening methodology.

Mr. Djordjevic's previous walkdown experience included all of the SEP plants (8 plants), Nine Mile - Unit 1, D.C. Cook - Units 1 & 2, the Hanford Reservation Purex facility and the Savannah River Plant Reservation L-Reactor. He has personally participated in seismic walkdowns at 26 U.S. nuclear units.

Representative projects include overseeing the SEP shake-table testing of electrical raceways, in-situ testing of control panels and instrumentation racks at various nuclear facilities, equipment anchorage walkdowns and evaluations at various nuclear facilities, principal author of the *CERTIVALVE* software package to evaluate nuclear service valves, and contributing author in the development of the *ANCHOR* and *EDASP* software packages commercially distributed by Stevenson & Associates.

S&A

Mr. Djordjevic has been involved extensively in the reassessment of safety-related equipment for commercial nuclear facilities and government U.S. Department of Energy facilities, for which he maintains an active Q-clearance status. He has served on advisory groups and review teams touring older existing nuclear facilities to assess safety and has performed earthquake reconnaissance at such installations following seismic events.

PROFESSIONAL GROUPS:

Member, Institute of Electrical and Electronics Engineers, Nuclear Power Engineering Committee Working Group SC 2.5 (IEEE-344)

Chairman, American Society of Civil Engineers Nuclear Structures and Materials Committee, Working Group for the Analysis and Design of Electrical Cable Support Systems

Member, American Society of Mechanical Engineers Operation, Application, and Components Committee on Valves, Working Group SC-5

S&A

SQUG

Certificate of Achievement

This is to Certify that

Frank B. Stille

has Completed the SQUG Walkdown Screening and Seismic Evaluation Training Course Held August 2–6, 1993

David A. Freed, MPR Associates
SQUG Training Coordinator

Neil P. Smith, Commonwealth Edison
SQUG Chairman

Robert P. Kassawara, EPRI
SQUG Program Manager

FRANK B. STILLE

EDUCATION:

B.S.C.E. - Syracuse University - 1957
M.S.C.E. - Syracuse University - 1961
SQUG Walkdown Screening and Seismic Evaluation Training Course - 1993

REGISTRATION:

Commonwealth of Massachusetts

PROFESSIONAL HISTORY:

Stevenson & Associates Inc., Woburn Massachusetts, 1993 - present
Northern States Power Company / Prairie Island Nuclear Generating Plant, Nuclear Projects Department - Consulting Engineer, 1992 - 1993
Teledyne Engineering Services, Waltham Massachusetts - Engineering Services Manager, Project Manager, Civil and Mechanical Engineer, 1974 - 1992
Aerospace Industry, 1957 -1974

PROFESSIONAL EXPERIENCE:

Mr. Stille has nineteen years experience in the Civil/Structural/Mechanical Engineering of large nuclear power generation facilities. His experience covers: 1) direct performance of Civil and Mechanical Engineering; 2) project management of power plant design modification projects; and, 3) management of engineering, design and drafting services for an architect - engineering firm. His current work at Stevenson & Associates has included participation in several A-46 / IPEEE projects and the performance of a Q.A. verification of a general purpose finite element program.

He spent 15 months at a two unit nuclear power generation plant as a Civil/Mechanical engineering consultant. During this period he performed a second level review of an A/E's pipe stress and pipe support design modifications for a large intake Cooling Water Header replacement project as the utility representative. His responsibilities also included the provision of new support design, weld control records, and field support to construction. His services to the utility also included participation on the Auxiliary Building Crane Upgrade Project. He solicited bids and purchased fabricated steel for installation on a 125-ton crane runway girder modification. This work also included field support to construction.

S&A

As a civil/mechanical engineer he has performed design and analysis of pressure components, piping systems and structures including field support to construction on a broad variety of projects. This work included the use of SAP - based piping stress codes and STRUDL based structures programs.

As a project manager he was responsible for nuclear power plant design modification projects ranging in size from $100K to $6M. His responsibilities included administration, scheduling, cost control, technical direction, and client interface. Examples of some of the projects he has managed are:

NRC Bulletin 79-14 Program, Turkey Point - Piping and pipe support analysis, design modification and field support to construction for 90 percent of all safety - related systems on both units.

As - Built / ISI Drawing Program, Turkey Point - Creation of piping stress isometric and pipe support CAD drawings for all safety - related piping systems on both units. These drawings contained information neccesary for implementation of the utility's Second Ten Year ISI Program.

Reactor Gas Vent Modification, Prairie Island - Piping and pipe support analysis, design modification, and field support to construction on Unit # 1 reactor.

MEMBERSHIP:

American Society of Mechanical Engineers - Member

S&A

Appendix D: Screening Verification Data Sheets (SVDS)

Northern States Power Company - Prairie Island Nuclear Generating Plant
SCREENING VERIFICATION DATA SHEET (SVDS)

Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK	Equip OK?
1	MCC 1K1	0	1EB / MOTOR CONTROL CENTER 1K BUS 1	AUX	695.00	G.2/5.2 NEAR RHR PIT	695.00	N/A	ABS	CRS	Yes	Yes	Yes	No	No
1	MCC 1K2	0	1EB / MOTOR CONTROL CENTER 1K BUS 2	AUX	695.00	G.8/6.5 NEAR CHG PUMPS	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1LA1	0	1EB / MOTOR CONTROL CENTER 1LA BUS 1	AUX	735.00	J.2/5.2 NEAR PERS AIRLOCK	735.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1R1	0	/ MOTOR CONTROL CENTER 1R BUS 1	AUX	735.00	H.2/3.7 U1 ROD DRIVE RM	735.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1S1	0	1EB / MOTOR CONTROL CENTER 1S BUS 1	AUX	735.00	H.3/3.7 U1 ROD DRIVE RM	735.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1T1	0	1EB / MOTOR CONTROL CENTER 1T BUS 1	AUX	755.00	G.4/8.1 121 CONT RM CHLR RM	755.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1T2	0	1EB / MOTOR CONTROL CENTER 1T BUS 2	AUX	755.00	G.4/10.0 122 CONT RM CHLR R	755.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1TA1	0	1EB / MOTOR CONTROL CENTER 1TA BUS 1	TURB	695.00	K.9/2.9 D1 DIESEL ROOM	695.00	N/A	ABS	CRS	Yes	No	No	Yes	No
1	MCC 1TA2	0	1EB / MOTOR CONTROL CENTER 1TA BUS 2	TURB	695.00	H.3/2.8 D2 DIESEL ROOM	695.00	N/A	ABS	CRS	Yes	No	No	Yes	No
1	MCC 1X1	0	1EB / MOTOR CONTROL CENTER 1X BUS 1	AUX	715.00	J.4/5.2 NEAR PENET CAB 1134	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1X2	0	1EB / MOTOR CONTROL CENTER 1X BUS 2	AUX	715.00	J.4/6.1 NEAR 11 VCT ROOM	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
2	1-52/RTA	0	1RP / A - TRAIN REAC TRIP BREAKER	AUX	735.00	U1 ROD DRIVE RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
2	BUS 111	0	1EB / BUS 111 480V SWITCHGEAR	TURB	715.00	E.0/9.3 111 BUS ROOM	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
2	BUS 121	0	1EB / BUS 121 480V SWITCHGEAR	TURB	715.00	F.0/9.3 121 BUS ROOM	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
3	BUS 15	0	/ 4.16KV SFGDS BUS 15	TURB	715.00		715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
3	BUS 16	0	/ 4.16KV SFGDS BUS 16	TURB	715.00	F.5/8.7 16 BUS ROOM	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
4	1PZRHTRB/XFMR	0	1EB / 1 PRZR HTR GRP B TRANSFORMER	AUX	735.00	H.1/3.9/735AUX	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

Certification:

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Approved: (Signatures of all Seismic Capability Engineers on the Seismic Review Team (SRT) are required; there should be atleast two on the SRT. All signatories should agree with all the entries and conclusions. One signatory should be a licensed professional engineer.)

Print or Type Name	Signature	Date
Greg Ridder	Greg Ridder	11-13-95
Walter Djordjevic	W Djordjevic	11/9/95

Certification:

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Approved: (One signature of Systems or Operations Engineer is required if the Seismic Capability Engineers deem it necessary.)

Print or Type Name	Signature	Date

Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK	Equip OK?
5	045-591	0	/ 121 CONTROL ROOM CHILLED WATER PUMP	AUX	755.00	G.6/8.7	755.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
5	045-592	0	/ 122 CONTROL ROOM CHILLED WATER PUMP	AUX	755.00	G.6/9.3	755.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
5	145-041	0	1VC / 11 CHG PUMP	AUX	695.00	H.5/6.6	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
5	145-042	0	1VC / 12 CHG PUMP	AUX	695.00	H.5/7.0	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
6	045-271	0	/ 121 DSL GEN OIL STOR TK SUBMERSIBLE PUMP	FUEL	695.00	LA.7/0.3	695.00	N/A	ABS	CRS	Yes	No	Yes	Yes	No
6	045-273	0	/ 123 DSL GEN OIL STOR TK SUBMERSIBLE PUMP	FUEL	695.00	KA.5/0.3	695.00	N/A	ABS	CRS	Yes	No	Yes	Yes	No
6	045-301	0	/ 121 DSL CLG WTR PMP OIL STOR TK SUBMERSIBLE PMP	SSCRN	695.00	C1/51.5	695.00	N/A	ABS	CRS	Yes	No	Yes	Yes	No
6	045-302	0	/ 122 DSL CLG WTR PMP OIL STOR TK SUBMERSIBLE PMP	SSCRN	695.00	B1.5/51.5	695.00	N/A	ABS	CRS	Yes	No	Yes	Yes	No
7	CV-31084	0	1MS / 11 STM GEN MN STM SAF RLF TO ATM CV	AUX	736.00		735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31089	0	1MS / 12 STM GEN MN STM SAF RLF TO ATM CV	AUX	756.00	IN 6 LINE J.3/5.6	755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	CV-31098	0	1MS / 11 LOOP A MN STM HDR ISOL CV	AUX	726.40		735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31099	0	1MS / 12 LOOP B MN STM HDR ISOL CV	AUX	739.00	IN 30 LINE J.2/5.8	755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	CV-31255	0	1RC / 1 REAC CLNT LOOP PRZR LTDN LN ISOL LCV 2	CNTMT	705.00	IN 2 LINE 28/259	711.50	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39401	0	1ZX / 11/13 FCU CLG WTR SUPPLY CV	AUX	704.00	IN 10 LINE J.0/6.0	715.00	Yes	BS	GRS	Yes	Yes	N/A	No	No
7	CV-39403	0	1ZX / 12/14 FCU CLG WTR SUPPLY CV	AUX	702.00	IN 10 LINE J.0/6.0	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39409	0	1ZX / 12/14 FCU CLG WTR RETURN CV	AUX	704.00	IN 10 LINE J.0/7.0	715.00	Yes	BS	GRS	Yes	Yes	N/A	No	No
7	CV-39411	0	1ZX / 11/13 FCU CLG WTR RETURN CV	AUX	704.00	IN 10 LINE J.0/7.0	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	CV-39201	0	1CL / 11 & 13 FCU CLG WTR RTN B-P CV	AUX	736.00	IN 10 LINE J.5/6.4	735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	CV-39203	0	1CL / 12 & 14 FCU CLG WTR RTN ORIF B-P CV	AUX	720.00	IN 10 LINE J.5/6.0	735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes

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Walter Djordjevic	W Djordjevic	11/9/95

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Print or Type Name	Signature	Date

Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK	Equip OK?
8	MV-32060	0	1VC / RFLG WTR EMERG MK-UP TO CHG PMPS MV	AUX	699.00	IN 4 LINE H.9/6.9	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32061	0	1VC / 11 VOL CONT TNK TO CHG PMPS ISOL MV	AUX	707.00	IN 4 LINE H.8/6.9	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32166	0	1VC / 1 REAC EXCS LTDN LINE ISOL MV A	AUX	720.00	IN 3 LINE L.5/6.8	735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32199	0	1VC / 1 REAC EXCS LTDN LINE ISOL MV B	CNTMT	720.00	IN 3 LINE 1/273	733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-37035	0	1RC / RCS VENT SYS PRZR VENT SV	CNTMT	760.00	IN 1 LINE 40/10	755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37036	0	1RC / RCS VENT SYS PRZR VENT SV	CNTMT	760.00	IN 1 LINE 40/10	755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37037	0	1RC / RCS VENT SYS REACTOR HEAD VENT SV	CNTMT	760.00	IN 1 LINE 40/10	755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37038	0	1RC / RCS VENT SYS REACTOR HEAD VENT SV	CNTMT	760.00	IN 1 LINE 40/10	755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37039	0	1RC / RCS VENT SYS TO PRT SV	CNTMT	760.00	IN 1 LINE 40/10	755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37040	0	1RC / RCS VENT SYS TO CNTMT ATMOS SV	CNTMT	760.00	IN 1 LINE 40/10	755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
10	076-021	0	/ 121 CONTROL ROOM AIR HANDLER	AUX	755.00	G.5/8.5	755.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	076-022	0	/ 122 CONTROL ROOM AIR HANDLER	AUX	755.00	G.5/9.5	755.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	174-011	0	ZC / 11 CNTM FAN COIL UNIT	CNTMT	711.00	20/50	711.50	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	174-012	0	/ 12 CONTAINMENT FAN COIL UNIT	CNTMT	711.00	30/90	711.50	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	174-013	0	ZC / 13 CNTM FAN COIL UNIT	CNTMT	755.00	8/310	755.00	N/A	ABS	CRS	No	Yes	Yes	Yes	No
10	174-014	0	/ 14 CONTAINMENT FAN COIL UNIT	CNTMT	735.00	12/320	733.75	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	CD-34049	0	0ZG / 121/122 DSL GEN RM OUTS AIR CD	TURB	725.00	IN DUCT JA.5/1.0	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	CD-34072	0	1ZC / 11 FCU DISCH TO CNTMT DOME CD	CNTMT	737.00	IN DUCT 14/73	733.75	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	CD-34073	0	1ZC / 11 FCU NORM DISCH TO GAP & STRUCT CD	CNTMT	741.00	IN DUCT 13/69	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	CD-34074	0	1ZC / 12 FCU DISCH TO CNTMT DOME CD	CNTMT	741.00	IN DUCT 17/128	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	CD-34075	0	1ZC / 12 FCU NORM DISCH TO GAP & STRUCT CD	CNTMT	741.00	IN DUCT 21/117	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
11	075-011	0	/ 121 CONTROL ROOM WATER CHILLER	AUX	755.00	G.7/8.0	755.00	N/A	ABS	CRS	No	No	No	Yes	No

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11	075-012	0	/ 122 CONTROL ROOM WATER CHILLER	AUX	755.00	G.7/10.0	755.00	N/A	ABS	CRS	No	No	No	Yes	No
12	046-031	0	/ 121 D1 DIESEL GENERATOR STARTUP AIR RECEIVER	AUX	695.00	D1 DIESEL GENERATOR ROOM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
12	046-032	0	/ 122 D2 DIESEL GENERATOR STARTUP AIR RECEIVER	AUX	695.00	D2 DIESEL GENERATOR ROOM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	PNL 111	0	1IP / INSTR BUS II PANEL (WHI) 111	TURB	715.00	G.1/8.2	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 112	0	1IP / INSTR BUS I PANEL (RED) 112	TURB	715.00	G.4/8.8	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 113	0	1IP / INSTR BUS III PANEL (BLUE) 113	TURB	715.00	G.1/8.0	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 134	0	EX / AC DISTRIBUTION PANEL 134	AUX	695.00	G.1/6.4	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 15	0	1DC / NUCLEAR DISTRIBUTION PANEL 15	TURB	715.00	G.0/8.3	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 151	0	DC / DISTRIBUTION PANEL 151	AUX	715.00		715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 16	0	1DC / NUCLEAR DISTRIBUTION PANEL 16	TURB	715.00	G.5/8.5	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 161	0	DC / DC DISTRIBUTION PANEL 161	AUX	715.00		715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 162	0	DC / DC DISTRIBUTION PANEL 162	AUX	715.00		715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 191	0	1DC / DC DISTRIBUTION PANEL 191	AUX	715.00	J.3/4.1 SW SIDE OF RWST	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 1EMA	0	1EM / DISTRIBUTION PANEL 1EMA	TURB	735.00	H.3/5.3 TRN A EVENT MON ROO	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 1EMB	0	1EM / DISTRIBUTION PANEL 1EMB	TURB	735.00	H.0/12.0 TRN B EVENT MON RO	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
17	034-011	0	D1 / 121 D1 DIESEL GENERATOR	TURB	695.00	K.5/2.4	695.00	Yes	BS	GRS	Yes	No	Yes	Yes	No
17	034-021	0	D2 / D2 DIESEL GENERATOR	TURB	695.00	H.3/2.4	695.00	Yes	BS	GRS	Yes	No	Yes	Yes	No
18	18036	0	1AF / AUX FW TO 11 STM GEN FI	AUX	700.00	ON W SIDE WALL GRID H.0/8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	18038	0	1AF / AUX FW TO 12 STM GEN FI	AUX	700.00	ON W SIDE WALL GRID H.0/8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1FI-115B	0	1VC / 11 REAC CLNT PMP SL WTR INJ FI	AUX	720.00	ON W SIDE WALL L.5/7.0	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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18	1FI-116B	0	1VC / 12 REAC CLNT PMP SL WTR INJ FI	AUX	720.00	ON W SIDE WALL L.5/7.0	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-426	0	1RP / 1 REAC CLNT LOOP PRZR (CHNNL I-RED) LVL XMTR	CNTMT	720.00	ON N SIDE WALL 11/18	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-428	0	1RP / 1 REAC CLNT LOOP PRZR (CHNNL III-BLU) LVL XMTR	CNTMT	720.00	ON E SIDE WALL 12/30	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-487	0	1EM / 11 STM GEN LOOP A WR LVL XMTR	CNTMT	716.00	ON SHLD WALL 6/192	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-488	0	1EM / 12 STM GEN LOOP B WR LVL XMTR	CNTMT	716.00	ON SHLD WALL 18/337	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-751	0	1EM / 11 RX VSL HEAD UPPER RNG TRN A D/P XMTR	AUX	735.00	ON INSTR RACK GRID J.5/ 4.2	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-753	0	1EM / 11 RX VSL HEAD DYNAMIC RNG TRN A D/P XMTR	AUX	735.00	ON INSTR RACK GRID J.5/ 4.2	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-761	0	1EM / 12 RX VSL HEAD UPPER RNG TRN B D/P XMTR	AUX	735.00	ON INSTR RACK GRID J.5/ 4.5	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-763	0	1EM / 12 RX VSL HEAD DYNAMIC RNG TRN B D/P XMTR	AUX	735.00	ON ISNTR RACK GRID J.5/ 4.5	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-920	0	1EM / 11 RWST LVL XMTR	AUX	700.00	ON E SIDE WALL J.3/4.3	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-921	0	1EM / 11 RWST LVL XMTR	AUX	700.00	ON E SIDE WALL J.3/4.3	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1PT-429	0	1RP / 1 REAC CLNT LOOP PRZR (CHNNL I-RED) P XMTR	CNTMT	720.00	ON N SIDE WALL 11/16	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1PT-431	0	1RP / 1 REAC CLNT LOOP PRZR (CHNNL III-BLU) P XMTR	CNTMT	720.00	ON E SIDE WALL 12/30	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1PT-468	0	1MS / 11 STM GEN LOOP A (CHNNL I-RED) P XMTR	AUX	720.00	ON NORTH SIDE WALL P.0/6.0	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1PT-478	0	1MS / 12 STM GEN LOOP B (CHNNL III-BLU) P XMTR	AUX	720.00	ON EAST SIDE COL J.1/5.9	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
19	1TE-451A	0	1EM / 1 REAC CLNT LOOP B HOT LEG RTD	CNTMT	723.00	IN 29 LINE 35/352	733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes

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Greg Ridder	Greg Ridder	11-13-95
Walter Djordjevic		11/9/95

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20	14MR	0	1MP / 14 MISCELLANEOUS RELAY RACK	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	1AMR1	0	1RP / MISCELLANEOUS RELAY RACK 1AMR1	AUX	715.00	RELAY ROOM	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1ASG1	0	1RP / SAFEGUARD RELAY RACK 1ASG1	AUX	715.00	RELAY ROOM	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1ASG2	0	1RP / SAFEGUARD RELAY RACK 1ASG2	AUX	715.00	RELAY ROOM	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1B1	0	1RP / PROCESS PROTECTION RACK 1B1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1B2	0	1RP / PROCESS PROTECTION RACK 1B2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1BSG1	0	1RP / SAFEGUARD RELAY RACK 1BSG1	AUX	715.00	RELAY ROOM	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1BSG2	0	1RP / SAFEGUARD RELAY RACK 1BSG2	AUX	715.00	RELAY ROOM	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1NR3	0	1NI / NUCLEAR INSTRUMENTATION RACK 1NR3	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	1NR4	0	1NI / NUCLEAR INSTRUMENTATION RACK 1NR4	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	1PLP	0	1BM / PROCESS CONTROL RACK 1PLP	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1R1	0	1RP / PROCESS PROTECTION RACK 1R1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1R2	0	1RP / PROCESS PROTECTION RACK 1R2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1RCS1	0	1RC / PROCESS CONTROL RACK 1RCS1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1RCS2	0	1RC / PROCESS CONTROL RACK 1RCS2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	A	0	0MP / CONTROL PANEL A	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	B-1	0	1MP / CONTROL PANEL B-1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	B15 LOGIC-1	0	2EA / BUS 15 LOGIC CAB 1	TURB	715.00	E.3/8.0	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	B15 LOGIC-2	0	2EA / BUS 15 LOGIC CAB 2	TURB	715.00	E.3/8.0	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	B15/LOAD SEQ CAB	0	EA / BUS 15 SAFEGUARDS LOAD SEQUENCER CABINET	TURB	715.00		715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	C-1	0	1MP / CONTROL PANEL C-1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	D-1	0	1MP / CONTROL PANEL D-1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	E-1	0	1MP / CONTROL PANEL E-1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	EM-A1	0	1EM / EVENT MONITORING RACK EM-A1	AUX	735.00	120 BUS RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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Walter Djordjevic	W Djordjevic	11/9/95

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20	EM-A2	0	2EM / EVENT MONITORING RACK EM-A2	AUX	735.00	120 BUS RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	EM-A3	0	0EM / EVENT MONITORING RACK EM-A3	AUX	735.00	120 BUS RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	EM-B1	0	1EM / EVENT MONITORING RACK EM-B1	AUX	735.00	220 BUS RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	EM-B2	0	2EM / EVENT MONITORING RACK EM-B2	AUX	735.00	220 BUS RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	EM-B3	0	0EM / EVENT MONITORING RACK EM-B3	AUX	735.00	220 BUS RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	G-1	0	0MP / CONTROL PANEL G-1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No

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0	067-011	0	/ 121 SAFEGUARD TRAVELING WATER SCREEN	SSCRN	695.00	E1.0/81.9	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	067-012	0	/ 122 SAFEGUARD TRAVELING WATER SCREEN	SSCRN	695.00	E1.0/91.2	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	069-161	0	/ 121 D1 DIESEL GENERATOR AIR INTAKE FILTER	TURB	715.00	K.1/2.2	715.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	069-162	0	/ 122 D2 DIESEL GENERATOR AIR INTAKE FILTER	TURB	715.00	H.9/2.2	715.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	158-011	0	CL / 11 COOLING WATER STRAINER	SSCRN	695.00	B1.5/81.6	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	258-012	0	2CL / 22 CL STRAINER	SSCRN	695.00	B1.7/91.5	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1A1	0	1EB / MOTOR CONTROL CENTER 1A BUS 1	TURB	695.00	F.6/8.9 11/21 AFW PUMP ROOM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1A2	0	1EB / MOTOR CONTROL CENTER 1A BUS 2	TURB	695.00	E.5/8.4 11/21 AFW PUMP ROOM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1AB1	0	1EB / MOTOR CONTROL CENTER 1AB BUS 1	SSCRN	695.00	B1.2/81.6 NEAR 11/12 CL STR	695.00	N/A	ABS	CRS	Yes	No	No	Yes	No
1	MCC 1AC1	0	1EB / MOTOR CONTROL CENTER 1AC BUS 1	TURB	695.00	C.6/8.3 11 BATTERY ROOM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1AC2	0	1EB / MOTOR CONTROL CENTER 1AC BUS 2	TURB	695.00	D.4/8.6 12 BATTERY ROOM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2A1	0	2EB / MOTOR CONTROL CENTER 2A BUS 1	TURB	695.00	E.5/9.5 12/22 AFW PUMP ROOM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2A2	0	2EB / MOTOR CONTROL CENTER 2A BUS 2	TURB	695.00	F.5/9.3 12/22 AFW PUMP ROOM	0.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2AC1	0	2EB / MOTOR CONTROL CENTER 2AC BUS 1	TURB	695.00	C.5/9.5 21 BATTERY ROOM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2AC2	0	2EB / MOTOR CONTROL CENTER 2AC BUS 2	TURB	695.00	D.5/9.5 22 BATTERY ROOM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes

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Walter Djordjevic		11/15/95

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Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK?	Equip OK?
2	2-52/RTA	0	2RP / REACTOR TRIP BREAKER	AUX	735.00	U2 ROD DRIVE RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
6	145-392	0	CL / 12 DD CLP	SSCRN	695.00	C1.2/81.5	695.00	N/A	ABS	CRS	Yes	No	No	Yes	No
6	245-392	0	2CL / 22 DD CLP	SSCRN	695.00	C1.2/91.2	695.00	N/A	ABS	CRS	Yes	No	No	Yes	No
7	CV-31423	0	0CL / 12 DDCLP JCKT CLR OUTL CV	SSCRN	705.00	IN 3 LINE C1.5/81.3	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31457	0	0CL / 22 DDCLP JCKT CLR OUTL CV	SSCRN	705.00	IN 3 LINE C1.5/91.7	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31999	0	2AF / 22 TD AFW PMP STM BLOCK CV	TURB	697.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-37093	0	2RV / RCS VENT SYS REACTOR HEAD VENT SV	CNTMT	760.00		755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37094	0	2RV / RCS VENT SYS REACTOR HEAD VENT SV	CNTMT	760.00		755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37095	0	2RV / RCS VENT SYS TO PRT SV	CNTMT	760.00		755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37096	0	2RV / RCS VENT SYS TO CNTMT ATMOS SV	CNTMT	760.00		755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
9	032-011	0	/ 121 D1 DIESEL GENERATOR EXHAUST FAN	TURB	715.00	JA.6/2.7	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
9	032-012	0	/ 122 DIESEL GENERATOR ROOM EXHAUST FAN	TURB	715.00	JA.4/2.7	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
9	032-041	0	/ 121 D1 DIESEL GENERATOR SUPPLY FAN	TURB	715.00	JA.6/2.4	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
9	032-042	0	/ 122 D2 DIESEL GENERATOR SUPPLY FAN	TURB	715.00	JA.4/2.4	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
9	132-281	0	/ 11 SCREENHOUSE ROOF EXHAUST FAN	SSCRN	715.00	B1.3/81.7	695.00	N/A	ABS	CRS	No	No	No	Yes	No
9	132-291	0	/ 11 SCREENHOUSE DIESEL COOLING SUPPLY FAN	SSCRN	695.00	E1.2/81.4	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
9	232-281	0	/ 21 SCREENHOUSE ROOF EXHAUST FAN	SSCRN	715.00	B1.2/91.2	695.00	N/A	ABS	CRS	No	No	No	Yes	No
9	232-291	0	/ 21 SCREENHOUSE DIESEL COOLING SUPPLY FAN	SSCRN	695.00	E1.0/91.7	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	CD-34136	0	0ZR / 11 SCVNG & COMBTN AIR CD	SSCRN	713.00	IN DUCT C1.9/81.0	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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10	CD-34137	0	0ZR / 11 CLASS I ROOF EXHT FAN DSCH CD	SSCRN	708.00	IN DUCT B1.1/81.8	69[illegible].00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	CD-34138	0	0ZR / 21 CLASS I ROOF EXHT FAN DSCH CD	SSCRN	708.00	IN DUCT B1.1/91.2	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	CD-34139	0	0ZR / 21 SCVNG & COMBTM AIR CD	SSCRN	713.00	IN DUCT C1.9/101.0	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	CD-34143	0	0ZN / 121 CONT RM AIR HNDLR DSCH CD	AUX	762.00	IN DUCT G.5/8.8	755.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	CD-34144	0	0ZN / 122 CONT RM AIR HNDLR DSCH CD	AUX	762.00	IN DUCT G.5/9.1	755.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
12	146-011	0	CL / 12 CL PUMP DIESEL START-UP AIR RECEIVERS	SSCRN	695.00	C1.1/81.0	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
12	246-011	0	2CL / 22 CL PUMP DIESEL START-UP AIR RECEIVERS	SSCRN	695.00	C1.2/101	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 12	0	1DC / DISTRIBUTION PANEL 12	TURB	695.00	D.7/8.9 12 BATTERY ROOM	695.00	Yes	BS	GRS	Yes	No	No	Yes	No
14	PNL 21	0	2DC / DISTRIBUTION PANEL 21	TURB	695.00	C.9/9.2 21 BATTERY	695.00	Yes	BS	GRS	Yes	No	No	Yes	No
14	PNL 211	0	2IP / INSTRUMENT BUS II PANEL (WHI) 211	TURB	715.00	G.1/9.7	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 212	0	2IP / INSTRUMENT BUS I PANEL (RED) 212	TURB	715.00	G.4/9.2	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 213	0	2IP / INSTRUMENT BUS III PANEL (BLU) 213	TURB	715.00	G.1/10.0	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 22	0	2DC / DC DISTRIBUTION PANEL 22	TURB	715.00		715.00	Yes	BS	GRS	Yes	No	No	Yes	No
14	PNL 25	0	2DC / NUCLEAR DISTRIBUTION PANEL 25	TURB	715.00	G.0/9.7	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 26	0	2DC / NUCLEAR DISTRIBUTION PANEL 26	AUX	715.00	G.5/9.5	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
15	11 BATT	0	1DC / 11 STATION BATTERY	TURB	695.00		695.00	N/A	ABS	CRS	Yes	No	Yes	Yes	No
15	12 BATT	0	1DC / 12 BATTERY	TURB	695.00		695.00	N/A	ABS	CRS	Yes	No	Yes	Yes	No
15	21 BATT	0	2DC / 21 BATTERY	TURB	695.00	21 BATTERY RM	695.00	N/A	ABS	CRS	Yes	No	Yes	Yes	No
15	22 BATT	0	2DC / 22 BATTERY	TURB	695.00		695.00	N/A	ABS	CRS	Yes	No	Yes	Yes	No
16	11 BATT CHG	0	1DC / 11 BATTERY CHARGER	TURB	695.00	11 BATT RM	695.00	N/A	ABS	CRS	Yes	No	No	Yes	No
16	11 INV	0	1IP / 11 INVERTER	TURB	695.00	11 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes

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16	12 BATT CHG	0	1DC / 12 BATTERY CHARGER	TURB	695.00	12 BATT RM	695.00	N/A	ABS	CRS	Yes	No	No	Yes	No
16	12 INV	0	1IP / 12 INVERTER	TURB	695.00	12 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	13 INV	0	1IP / 13 INVERTER	TURB	695.00	11 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	17 INV	0	1IP / 17 INVERTER	TURB	695.00	11 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	18 INV	0	1IP / 18 INVERTER	TURB	695.00	12 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	21 BATT CHG	0	2DC / 21 BATTERY CHARGER	TURB	695.00	21 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	21 INV	0	2IP / 21 INVERTER	TURB	695.00	21 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	22 BATT CHG	0	2DC / 22 BATTERY CHARGER	TURB	695.00	22 BATT RM	695.00	N/A	ABS	CRS	Yes	No	No	No	No
16	22 INV	0	2IP / 22 INVERTER	TURB	695.00	22 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	23 INV	0	2IP / 23 INVERTER	TURB	695.00	21 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	27 INV	0	2IP / 27 INVERTER	TURB	695.00	21 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	D1/GEN RLY PNL	0	1D1 / D1 EMERG GEN RELAY PNL	TURB	695.00	LA.5/2.8/695TUR	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	D2/GEN RLY PNL	0	1D2 / D2 EMERG GEN RELAY PNL	TURB	695.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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Mark McKeown	Mark V. McKeown	11/16/95
Walter Djordjevic	W Djordjevic	11/15/95

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Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK?	Equip OK?
0	1NE-51	0	NI / EXCORE DETECTION TRN A DETECTOR ASSY	CNTMT	712.00		711.50	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	1NE-52	0	NI / EXCORE DETECTION TRN B DETECTOR ASSY	CNTMT	712.00		711.50	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	269-301	0	/ D5 ENG 1 COMBUSTION AIR FILTER	D5/D6 BLDG	718.00	G.8/17.5/	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	269-302	0	/ D5 ENG 2 COMBUSTION AIR FILTER	D5/D6 BLDG	718.00	G.4/17.8/	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	269-303	0	/ D6 ENG 1 COMBUSTION AIR FILTER	D5/D6 BLDG	718.00	J.2/17.8/	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	269-304	0	/ D6 ENG 2 COMBUSTION AIR FILTER	D5/D6 BLDG	718.00	H.8/17.5/	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	278-011	0	/ D5 ENG 1 EXHAUST SILENCER	D5/D6 BLDG	707.00	G.2/17.6/	707.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	278-012	0	/ D5 ENG 2 EXHAUST SILENCER	D5/D6 BLDG	707.00	H.3/17.5/	707.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	278-013	0	/ D6 ENG 1 EXHAUST SILENCER	D5/D6 BLDG	707.00	J.5/17.6/	707.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	278-014	0	/ D6 ENG 2 EXHAUST SILENCER	D5/D6 BLDG	707.00	H.5/17.5/	707.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	2NE-51	0	NI / EXCORE DETECTION TRN A DETECTOR ASSY	CNTMT	712.00		711.50	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
0	2NE-52	0	NI / EXCORE DETECTION TRN B DETECTOR ASSY	CNTMT	721.00		733.75	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1AB2	0	EB / MOTOR CONTROL CENTER 1AB BUS 2	SSCRN	695.00	B1.2/91.4 NEAR 21/22 CL STR	695.00	N/A	ABS	CRS	Yes	No	No	Yes	No
1	MCC 1L1	0	1EB / MOTOR CONTROL CENTER 1L BUS 1	AUX	715.00	J.2/5.2 NEAR PENET CAB 1134	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 1L2	0	1EB / MOTOR CONTROL CENTER 1L BUS 2	AUX	715.00	J.4/5.4 NEAR 11 VCT ROOM	715.00	N/A	ABS	CRS	Yes	Yes	Yes	No	No
1	MCC 1LA2	0	1EB / MOTOR CONTROL CENTER 1LA BUS 2	AUX	735.00	H.7/5.8 NEAR ELEVATOR	735.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2K1	0	2EB / MOTOR CONTROL CENTER 2K BUS 1	AUX	695.00	G.2/12.2 NEAR RHR PIT	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2K2	0	2EB / MOTOR CONTROL CENTER 2K BUS 2	AUX	695.00	H.2/11.7 NEAR CHARGING PUMPS	695.00	N/A	ABS	CRS	Yes	Yes	Yes	No	No

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Frank Stille	Frank B. Stille	11/15/95

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Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK?	Equip OK?
1	MCC 2L1	0	2EB / MOTOR CONTROL CENTER 2L BUS 1	AUX	715.00	J.2/12.8 NEAR PENET CAB 2134	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2L2	0	2EB / MOTOR CONTROL CENTER 2L BUS 2	AUX	715.00	J.5/11.7 NEAR 21 VCT ROOM	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2LA1	0	2EB / MOTOR CONTROL CENTER 2LA BUS 1	AUX	735.00	J.2/12.8 SOUTH OF STAIRS	735.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2LA2	0	2EB / MOTOR CONTROL CENTER 2LA BUS 2	AUX	735.00	H.7/12.2 EAST OF STAIRS	735.00	N/A	ABS	CRS	Yes	No	No	Yes	No
1	MCC 2R1	0	2EB / MOTOR CONTROL CENTER 2R BUS 1 & 2	AUX	735.00	H.2/14.4 U2 RODDRIVE RM	735.00	N/A	ABS	CRS	Yes	No	No	Yes	No
1	MCC 2S1	0	EB / MOTOR CONTROL CENTER 2S BUS 1	AUX	735.00	H.2/14.4 U2 RODDRIVE RM	735.00	N/A	ABS	CRS	Yes	No	No	Yes	No
1	MCC 2TA1	0	EB / MOTOR CONTROL CENTER 2TA BUS 1	D5/D6 BLDG	718.00	H.2/17.0 BUS 25 ROOM	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2TA2	0	EB / MOTOR CONTROL CENTER 2TA BUS 2	D5/D6 BLDG	718.00	J.5/17.0 BUS 26 ROOM	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2X1	0	2EB / MOTOR CONTROL CENTER 2X BUS 1	AUX	715.00	J.8/12.8 NEAR PENET CAB 2134	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
1	MCC 2X2	0	2EB / MOTOR CONTROL CENTER 2X BUS 2	AUX	715.00	J.5/11.8 NEAR 21 VCT ROOM	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
2	1-52/RTB	0	1RP / B - TRAIN REAC TRIP BREAKER	AUX	735.00	U1 ROD DRIVE RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
2	2-52/RTB	0	2RP / REACTOR TRIP BREAKER	AUX	735.00	U2 ROD DRIVE RM	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
2	BUS 112	0	EB / BUS 112 480V SWITCHGEAR	AUX	735.00	G.3/5.6 112 BUS ROOM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
2	BUS 122	0	EB / BUS 122 480V SWITCHGEAR	AUX	735.00	G.2/12.6 122 BUS ROOM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
2	BUS 211	0	/	D5/D6 BLDG	735.00	G.8/15.7 211 BUS ROOM	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes

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Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK?	Equip OK?
2	BUS 212	0	EB / BUS 212 480V SWITCHGEAR	D5/D6 BLDG	735.00		735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
2	BUS 221	0	/	D5/D6 BLDG	735.00	H.8/15.7 221 BUS ROOM	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
2	BUS 222	0	EB / BUS 222 480V SWITCHGEAR	D5/D6 BLDG	735.00		735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
3	BUS 25	0	/	D5/D6 BLDG	718.00	G.8/16.0	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
3	BUS 26	0	/	D5/D6 BLDG	718.00	J.2/16.0	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
4	111M/XFMR	0	EB / 111M TRANSFORMER	TURB	715.00	BUS 111	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
4	112M/XFMR	0	EB / 112M TRANSFORMER	AUX	735.00	BUS 112	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
4	121M/XFMR	0	EB / 121M TRANSFORMER	TURB	715.00	BUS 121	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
4	122M/XFMR	0	EB / 122M TRANSFORMER	AUX	735.00	BUS 122	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
4	1PZRHTRA/XFMR	0	1EB / 1 PRZR HTR GRP A TRANSFORMER	AUX	735.00	H.1/3.9/735AUX	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
4	211M/XFMR	0	EB / 211M TRANSFORMER	D5/D6 BLDG	735.00	BUS 211	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
4	212M/XFMR	0	2EB / 212M TRANSFORMER	D5/D6 BLDG	735.00	BUS 212	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
4	221M/XFMR	0	2EB / 221M TRANSFORMER	D5/D6 BLDG	735.00	BUS 221	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
4	222M/XFMR	0	2EB / 222M TRANSFORMER	D5/D6 BLDG	735.00	BUS 222	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
4	2PZRHTRA/XFMR	0	2EB / 2 PRZR HTR GRP A TRANSFORMER	AUX	735.00	H.2/14.1/735AUX	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
4	2PZRHTRB/XFMR	0	2EB / 2 PRZR HTR GRP B TRANSFORMER	AUX	735.00	H.2/14.1/735AUX	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
4	GRD/D5	0	2D5 / D5 DSL GEN NEUT GROUNDING TRANSFORMER	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
4	GRD/D6	0	2D6 / D6 DSL GEN NEUT GROUNDING TRANSFORMER	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-041	0	/ 21 CHARGING PUMP	AUX	695.00	H.5/10.4/	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
5	245-042	0	/ 22 CHARGING PUMP	AUX	695.00	H.5/11.0/	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
5	245-331	0	AF / 21 AUXILIARY FEEDWATER PUMP MOTOR DRIVEN	TURB	695.00	F.5/8.6	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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5	245-881	0	/ 21 D5 FO STG TK XFER PUMP	D5/D6 BLDG	687.00	H.2/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-882	0	/ 22 D6 FO STG TK XFER PUMP	D5/D6 BLDG	687.00	H.4/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-883	0	/ 23 D5 FO STG TK XFER PUMP	D5/D6 BLDG	687.00	H.1/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-884	0	/ 24 D6 FO STG TK XFER PUMP	D5/D6 BLDG	687.00	H.5/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-901	0	/ D5 ENG 1 ENG DRVN FO PUMP	D5/D6 BLDG	695.00	G.5/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-902	0	/ D5 ENG 2 ENG DRVN FO PUMP	D5/D6 BLDG	695.00	G.5/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-903	0	/ D6 ENG 1 ENG DRVN FO PUMP	D5/D6 BLDG	695.00	J.0/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-904	0	/ D6 ENG 2 ENG DRVN FO PUMP	D5/D6 BLDG	695.00	J.0/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-911	0	/ D5 ENG 1 FO BACKUP PUMP	D5/D6 BLDG	695.00	H.2/17.5/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-912	0	/ D5 ENG 2 FO BACKUP PUMP	D5/D6 BLDG	695.00	H.2/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-913	0	/ D6 ENG 1 FO BACKUP PUMP	D5/D6 BLDG	695.00	H.7/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-914	0	/ D6 ENG 2 FO BACKUP PUMP	D5/D6 BLDG	695.00	H.7/17.5/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-921	0	/ D5 1A ENG DRVN L/O PUMP	D5/D6 BLDG	695.00	G.4/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-922	0	/ D5 1B ENG DRVN L/O PUMP	D5/D6 BLDG	695.00	G.6/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-923	0	/ D5 2A ENG DRVN L/O PUMP	D5/D6 BLDG	695.00	G.6/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-924	0	/ D5 2B ENG DRVN L/O PUMP	D5/D6 BLDG	695.00	G.4/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-925	0	/ D6 1B ENG DRVN L/O PUMP	D5/D6 BLDG	695.00	J.1/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-926	0	/ D6 1B ENG DRVN L/O PUMP	D5/D6 BLDG	695.00	H.9/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-927	0	/ D6 2A ENG DRVN L/O PUMP	D5/D6 BLDG	695.00	H.9/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-928	0	/ D6 2B ENG DRVN L/O PUMP	D5/D6 BLDG	695.00	J.1/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-931	0	/ D5 ENG 1 AC PRELUBE PUMP	D5/D6 BLDG	695.00	H.2/17.5/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-932	0	/ D5 ENG 2 AC PRELUBE PUMP	D5/D6 BLDG	695.00	H.2/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-933	0	/ D6 ENG 1 AC PRELUBE PUMP	D5/D6 BLDG	695.00	H.7/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-934	0	/ D6 ENG 2 AC PRELUBE PUMP	D5/D6 BLDG	695.00	H.7/17.5/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-941	0	/ D5 ENG 1 DC BU PRELUBE PUMP	D5/D6 BLDG	695.00	H.2/17.5/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-942	0	/ D5 ENG 2 DC BU PRELUBE PUMP	D5/D6 BLDG	695.00	H.2/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-943	0	/ D6 ENG 1 DC BU PRELUBE PUMP	D5/D6 BLDG	695.00	H.7/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes

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5	245-944	0	/ D6 ENG 2 DC BU PRELUBE PUMP	D5/D6 BLDG	695.00	H.7/17.5/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-971	0	/ D5 ENG 1 ENG DRVN HT CLNT PUMP	D5/D6 BLDG	695.00	G.5/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-972	0	/ D5 ENG 2 ENG DRVN HT CLNT PUMP	D5/D6 BLDG	695.00	G.5/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-973	0	/ D6 ENG 1 ENG DRVN HT CLNT PUMP	D5/D6 BLDG	695.00	J.0/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-974	0	/ D6 ENG 2 ENG DRVN HT CLNT PUMP	D5/D6 BLDG	695.00	J.0/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-981	0	/ D5 ENG 1 ENG DRVN LT CLNT PUMP	D5/D6 BLDG	695.00	G.5/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-982	0	/ D5 ENG 2 ENG DRVN LT CLNT PUMP	D5/D6 BLDG	695.00	G.5/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-983	0	/ D6 ENG 1 ENG DRVN LT CLNT PUMP	D5/D6 BLDG	695.00	J.0/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-984	0	/ D6 ENG 2 ENG DRVN LT CLNT PUMP	D5/D6 BLDG	695.00	J.0/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-991	0	/ D5 ENG 1 HT CLNT PREHTR CIRC PUMP	D5/D6 BLDG	695.00	H.2/17.5/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-992	0	/ D5 ENG 2 HT CLNT PREHTR CIRC PUMP	D5/D6 BLDG	695.00	H.2/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-993	0	/ D6 ENG 1 HT CLNT PREHTR CIRC PUMP	D5/D6 BLDG	695.00	H.7/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
5	245-994	0	/ D6 ENG 2 HT CLNT PREHTR CIRC PUMP	D5/D6 BLDG	695.00	H.7/17.5/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
7	2AF-29-1	0	AF / 21 AUX FW PUMP SUCT RELIEF	TURB	695.00	F.5/9.6	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2AF-29-2	0	AF / 22 AUX FW PUMP SUCT RELIEF	TURB	695.00	F.5/9.7	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2CL-25-1	0	CL / 22 DDCLP JACKET HX RELIEF	SSCRN	700.00	ON S WALL C1.4/91.3	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2CL-57-3	0	CL / 21 CONTAINMENT FAN COIL UNITS - RELIEF VLV	AUX	715.00	29/270	735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2CL-57-4	0	CL / 22 CONTAINMENT FAN COIL UNITS - RELIEF VLV	CNTMT	735.00	22/320	733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2CL-57-5	0	CL / 23 CONTAINMENT FAN COIL UNITS - RELIEF VLV	AUX	715.00	12/15	735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2CL-57-6	0	CL / 24 CONTAINMENT FAN COIL UNITS - RELIEF VLV	CNTMT	735.00	14/10	733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2RC-10-1	0	RC / PRESSURIZER RELIEF VALVE	CNTMT	738.00		755.00	N/A	ABS	CRS	No	Yes	N/A	Yes	No
7	2RC-10-2	0	RC / PRESSURIZER RELIEF VALVE	CNTMT	738.00		755.00	N/A	ABS	CRS	No	Yes	N/A	Yes	No
7	2VC-24-1	0	VC / 21 VOLUME CONTROL TANK RELIEF	AUX	735.00		735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes

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Frank Stille	Frank B. Stille	11/15/95

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Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK?	Equip OK?
7	2VC-25-1	0	VC / RCP SEAL RETURN/EXCESS LETDOWN RELIEF TO PRT	AUX	715.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2VC-25-2	0	VC / LETDOWN LINE TO VCT INLET	AUX	715.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2VC-28-1	0	VC / 21 CHARGING PUMP DISCHARGE RELIEF	AUX	695.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	2VC-28-2	0	VC / 22 CHARGING PUMP DISCHARGE RELIEF	AUX	698.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CL-25-1	0	CL / 12 DDCLP JACKET HX RELIEF	SSCRN	695.00		695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CL-57-3	0	CL / 11 CONTM FAN COIL-RELIEF	CNTMT	730.00		733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CL-57-4	0	CL / 12 CONTM FAN COIL-RELIEF	CNTMT	725.00		733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CL-57-5	0	CL / 13 CONTM FAN COIL-RELIEF	CNTMT	729.00		733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CL-57-6	0	CL / 14 CONTM FAN COIL-RELIEF	CNTMT	730.00		733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31059	0	1MS / 11 AFWP MN STM THTL CV	TURB	697.00	IN 3 LINE F.9/8.1	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31060	0	MS / 22 TD AFW PUMP TRIP THROTTLE CV	TURB	697.00		695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31102	0	MS / 21 STM GEN POWER OPERATED RELIEF CV	AUX	735.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	CV-31107	0	MS / 22 STM GEN POWER OPERATED RELIEF CV	AUX	759.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	CV-31116	0	2MS / 21 LOOP A MN STM HDR ISOL CV	AUX	726.00		735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31117	0	2MS / 22 LOOP B MN STM HDR ISOL CV	AUX	755.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	CV-31226	0	VC / 1 REAC CLNT LOOP PRZR LTDN LN ISOL LCV A	CNTMT	705.00	IN 2 LINE 27/311	711.50	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31230	0	VC / 2 REAC CLNT LOOP PRZR LTDN LN ISOL CV A	CNTMT	705.00	IN 2 LINE GRID 28/4	711.50	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31279	0	VC / 2 REAC CLNT LOOP PRZR LTDN LN ISOL CV B	CNTMT	705.00	IN 2 LINE GRID 32/4	711.50	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31505	0	1CL / D1 DSL GEN CLG WTR SPLY CV	TURB	699.00	AT DSL GEN KA.0/2.2	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31506	0	1CL / D2 DSL GEN CLG WTR SPLY CV	TURB	699.00	AT DSL GEN JA.0/2.6	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes

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Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK?	Equip OK?
7	CV-31652	0	CL / 11 CLG WTR STRNR BCKWSH CV	SSCRN	697.00	IN 2 LINE B1.5/81.7	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31655	0	CL / 22 CLG WTR STRNR BCKWSH CV	SSCRN	697.00	IN 2 LINE B1.7/91.3	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31769	0	ZH / 121 CONT RM CHLLR UNIT CDSR CLG WTR OUTL TCV	AUX	756.00	IN 4 LINE G.8/7.8	755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	CV-31785	0	ZH / 122 CONT RM CHLLR UNIT CDSR CLG WTR OUTL TCV	AUX	756.00	IN 4 LINE G.8/10.2	755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	CV-31998	0	1AF / 11 TD AFW PMP STM BLOCK CV	TURB	697.00	IN 3 LINE F.9/7.9	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39402	0	ZX / 11/13 FCU CHILLED WTR SUPPLY CV	AUX	702.00	IN 10 LINE J.0/6.0	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39404	0	ZX / 12/14 FCU CHILLED WTR SUPPLY CV	AUX	702.00	IN 10 LINE J.0/6.0	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39405	0	ZX / 11 SHROUD CLG COILS TR A CHILLED WTR SUPPLY CV	CNTMT	749.00	IN 4 LINE 14.7/325	755.00	N/A	ABS	CRS	No	Yes	N/A	Yes	No
7	CV-39406	0	ZX / 12 SHROUD CLG COILS TR B CHILLED WTR SUPPLY CV	CNTMT	725.00	IN 4 LINE 18.6/310	733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39413	0	ZX / 22/24 FCU CLG WTR SUPPLY CV	AUX	710.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39414	0	ZX / 22/24 FCU CHILLED WTR SUPPLY CV	AUX	704.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39415	0	2ZX / 21/23 FCU CLG WTR SUPPLY CV	AUX	707.00	IN 10 LINE	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39416	0	ZX / 21/23 FCU CHILLED WTR SUPPLY CV	AUX	706.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-39417	0	ZX / 22 SHROUD CLG COILS TR A CHILLED WTR SUPPLY CV	CNTMT	762.00		755.00	N/A	ABS	CRS	No	Yes	N/A	Yes	No
7	CV-39419	0	ZX / 21 SHROUD CLG COILS TR B CHILLED WTR SUPPLY CV	CNTMT	760.00		755.00	N/A	ABS	CRS	No	Yes	N/A	Yes	No
7	CV-39421	0	ZX / 22/24 FCU CLG WTR RETURN CV	AUX	704.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	No	No
7	CV-39423	0	2ZX / 21/23 FCU CLG WTR RETURN CV	AUX	707.00	IN 10 LINE GRID K.0/12.0	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	RC-10-1	0	RC / PRESSURIZER RELIEF VALVE	CNTMT	738.00		755.00	N/A	ABS	CRS	No	Yes	N/A	Yes	No
7	RC-10-2	0	RC / PRESSURIZER RELIEF VALVE	CNTMT	738.00		755.00	N/A	ABS	CRS	No	Yes	N/A	Yes	No
7	RS-21-1	0	MS / SAFETY VALVE HEADER STM GENERATOR 11	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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7	RS-21-10	0	MS / SAFETY VALVE HEADER STM GENERATOR 12	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-11	0	MS / SAFETY VALVE HEADER STM GENERATOR 21	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-12	0	MS / SAFETY VALVE HEADER STM GENERATOR 21	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-13	0	MS / SAFETY VALVE HEADER STM GENERATOR 21	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-14	0	MS / SAFETY VALVE HEADER STM GENERATOR 21	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-15	0	MS / SAFETY VALVE HEADER STM GENERATOR 21	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-16	0	MS / SAFETY VALVE HEADER STM GENERATOR 22	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-17	0	MS / SAFETY VALVE HEADER STM GENERATOR 22	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-18	0	MS / SAFETY VALVE HEADER STM GENERATOR 22	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-19	0	MS / SAFETY VALVE HEADER STM GENERATOR 22	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-2	0	MS / SAFETY VALVE HEADER STM GENERATOR 11	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-20	0	MS / SAFETY VALVE HEADER STM GENERATOR 22	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-3	0	MS / SAFETY VALVE HEADER STM GENERATOR 11	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-4	0	MS / SAFETY VALVE HEADER STM GENERATOR 11	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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7	RS-21-5	0	MS / SAFETY VALVE HEADER STM GENERATOR 11	AUX	742.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-6	0	MS / SAFETY VALVE HEADER STM GENERATOR 12	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-7	0	MS / SAFETY VALVE HEADER STM GENERATOR 12	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-8	0	MS / SAFETY VALVE HEADER STM GENERATOR 12	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	RS-21-9	0	MS / SAFETY VALVE HEADER STM GENERATOR 12	AUX	762.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	SA-54-3	0	SA / D1 DSL GEN MAIN AIR RCVR RELIEF	TURB	695.00		695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	SA-54-6	0	SA / D2 DSL GEN MAIN AIR RCVR RELIEF	TURB	695.00		695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	SA-56-1	0	SA / 12 CLG WTR PUMP - DIESEL STARTING AIR	SSCRN	700.00		695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	SA-56-3	0	SA / 22 CLG WTR PUMP - DIESEL STARTING AIR	SSCRN	700.00		695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	VC-24-1	0	/ VOLUME CONTROL TANK RELIEF VALVE	AUX	735.00		735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	VC-25-1	0	VC / RC PUMPS DISCH LINE TO SEAL WTR FILTER - RELIEF	CNTMT	708.00		711.50	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	VC-25-2	0	VC / LETDOWN LINE TO VOLUME CONTROL TANK INLET - RLF	AUX	719.00		735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	VC-28-1	0	VC / 11 CHG PMP DISCH RELIEF	AUX	699.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	VC-28-2	0	VC / 12 CHG PMP DISCH RELIEF	AUX	699.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	ZH-16-1	0	ZH / 121 CHILLER OUTLET - RLF	AUX	764.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
7	ZH-16-2	0	ZH / 122 CHILLER OUTLET - RLF	AUX	764.00		755.00	N/A	ABS	CRS	Yes	Yes	N/A	Yes	Yes
8	CV-39200	0	CL / 21 & 23 FCU CLG WTR RTN ORIF B-P CV	AUX	723.00	IN 10 LINE K.5/12.0	735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes

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8	CV-39202	0	CL / 22 & 24 FCU CLG WTR RTN ORIF B-P CV	AUX	736.00	IN 10 LINE J.7/12.0	735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32031	0	CL / 1 TURB BLDG CLG WTR HDR MV	TURB	710.00	IN 24 LINE B.9/8.1	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32033	0	CL / 2 TURB BLDG CLG WTR HDR MV	TURB	710.00	IN 24 LINE B.9/9.9	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32034	0	CL / 121 CLWP DSCH HDR MV A	SSCRN	702.00	IN 24 LINE B1.4/81.9	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32035	0	CL / 121 CLWP DSCH HDR MV B	SSCRN	696.00	IN 24 LINE B1.4/81.8	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32036	0	CL / 121 CLWP DSCH HDR MV C	SSCRN	696.00	IN 24 LINE B1.4/91.2	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32037	0	CL / 121 CLWP DSCH HDR MV D	SSCRN	696.00	IN 24 LINE B1.4/91.2	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32062	0	2VC / RFLG WTR EMERG MK-UP TO CHG PMPS MV	AUX	699.00	IN 4 LINE H.9/10.8	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32063	0	2VC / 21 VOL CONT TNK TO CHG PMPS ISOL MV	AUX	707.00	IN 4 LINE H.7/11.1	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32144	0	CL / LOOP A/B CLG WTR HDR XOVR MV A	AUX	708.00	IN 24 LINE H.9/8.8	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32145	0	CL / 11 CC HX CLG WTR INLET MV	AUX	704.00	IN 12 LINE G.3/8.3	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32146	0	CL / 12 CC HX CLG WTR INLET MV	AUX	706.00	IN 12 LINE G.2/9.7	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32159	0	CL / LOOP A/B CLG WTR HDR XOVR MV B	AUX	708.00	IN 24 LINE H.9/9.2	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32160	0	CL / 21 CC HX CLG WTR INLET MV	AUX	705.00	IN 12 LINE G.2/8.3	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32161	0	CL / 22 CC HX CLG WTR INLET MV	AUX	704.00	IN 12 LINE G.3/9.7	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32194	0	VC / 2 REAC EXCS LTDN LINE ISOL MV A	AUX	720.00	IN 3 LINE L.5/11.2	735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32210	0	VC / 2 RCP SEAL RETURN/EXCESS LETDOWN ISOL TRN B MV	CNTMT	720.00	IN 3 LINE 1/88	733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32239	0	1AF / 11 TD AUX FW TO 12 STM GEN MV	TURB	703.00	IN 3 LINE F.6/6.1	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32246	0	AF / 22 TD AUX FW TO 21 STM GEN MV	TURB	703.00	IN 3 LINE F.6/9.9	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32384	0	AF / 21 AFWP DSCH TO 22 STM GEN MV	TURB	703.00	IN 3 LINE F.9/9.5	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33133	0	0CL / CLG WTR TO 121 SFGRDS TRVLG SCRNS SV	SSCRN	695.00	IN 3 LINE C1.7/91.0	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33134	0	0CL / CLG WTR TO 122 SFGRDS TRVLG SCRNS SV	SSCRN	695.00	IN 3 LINE C1.7/91.2	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes

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Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK?	Equip OK?
8	SV-33242	0	D1 / D1 DSL GEN AIR STRT VENT SV	TURB	697.00		695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33245	0	D2 / D2 DSL GEN AIR STRT VENT SV	TURB	697.00	AT MD CMPR HA.7/2.7	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33464	0	0CL / 12 DD CLG WTR PMP AIR MTR RS SV A	SSCRN	700.00	AT PMP ENG C1.2/81.8	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33465	0	CL / 12 DD CLWP AIR MTR LS SV B	SSCRN	700.00	AT PMP ENG C1.2/81.8	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33466	0	0CL / 22 DD CLWP AIR MTR RS SV A	SSCRN	699.00	AT PMP ENG C1.2/91.2	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33467	0	CL / 22 DD CLWP AIR MTR SV B	SSCRN	699.00	AT PMP ENG C1.2/91.2	695.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33498	0	/ 2 DSL GEN RM OUTS AIR B TRN DMPR SV	TURB	732.00	ON W SIDE WALL JA.4/1.0	735.00	Yes	BS	GRS	Yes	No	N/A	Yes	No
8	SV-33565	0	ZE / 21 AUX FW PMP MTR UNIT CLR SV	TURB	705.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33578	0	ZE / 12 AUX FW PMP MTR UNIT CLR SV	TURB	705.00	IN 1 LINE F.1/9.1	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-33987	0	/ D1 & D2 DSL GEN OUTSIDE AIR CD-34049 TRN A S	TURB	725.00	ON W SIDE WALL JA.4/1.0	735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-37091	0	RV / RCS VENT SYS PRZR VENT SV	CNTMT	760.00	IN 1 LINE 28/330	755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37092	0	RV / RCS VENT SYS PRZR VENT SV	CNTMT	760.00	IN 1 LINE 28/330	755.00	N/A	DOC	RRS	Yes	Yes	N/A	Yes	Yes
8	SV-37462	0	ZX / UNIT 1 TRAIN A CHILL WTR/CLG WTR ISOL SV	AUX	704.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-37463	0	ZX / UNIT 1 TRAIN B CHILL WTR/CLG WTR ISOL SV	AUX	702.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-37464	0	ZX / UNIT 2 TRAIN A CHILL WTR/CLG WTR ISOL SV	AUX	707.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-37465	0	ZX / UNIT 2 TRAIN B CHILL WTR/CLG WTR ISOL SV	AUX	707.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
9	232-421	0	/ 21 D5 DSL RM COOLING FAN	D5/D6 BLDG	695.00	G.8/17.8/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-422	0	/ 22 D6 DSL RM COOLING FAN	D5/D6 BLDG	695.00	H.8/17.8/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-441	0	/ 21 D5 DSL GEN BLDG SPLY FAN	D5/D6 BLDG	745.00	G.3/17.4/	745.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-442	0	/ 22 D6 DSL GEN BLDG SPLY FAN	D5/D6 BLDG	745.00	J.3/17.4/	745.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-443	0	/ 23 D5 DSL GEN BLDG SPLY FAN	D5/D6 BLDG	745.00	G.3/17.4/	745.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes

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9	232-444	0	/ 24 D6 DSL GEN BLDG SPLY FAN	D5/D6 BLDG	745.00	J.3/17.4/	745.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-451	0	/ 21 D5 DSL GEN BLDG RETURN FAN	D5/D6 BLDG	745.00	G.4/17.0/	755.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-452	0	/ 22 D6 DSL GEN BLDG RETURN FAN	D5/D6 BLDG	745.00	J.4/17.0/	755.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-453	0	/ 23 D5 DSL GEN BLDG RETURN FAN	D5/D6 BLDG	745.00	G.4/17.0/	755.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-454	0	/ 24 D6 DSL GEN BLDG RETURN FAN	D5/D6 BLDG	745.00	J.4/17.0/	755.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-461	0	/ D5 ENG 1 HT/LT RADIATOR FAN 1	D5/D6 BLDG	735.00	G.9/17.6/	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-462	0	/ D5 ENG 1 HT/LT RADIATOR FAN 2	D5/D6 BLDG	735.00	G.9/17.7/	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-463	0	/ D5 ENG 2 HT/LT RADIATOR FAN 1	D5/D6 BLDG	735.00	G.5/17.7/	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-464	0	/ D5 ENG 2 HT/LT RADIATOR FAN 2	D5/D6 BLDG	735.00	G.5/17.6/	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-465	0	/ D6 ENG 1 HT/LT RADIATOR FAN 1	D5/D6 BLDG	735.00	J.2/17.6/	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-466	0	/ D6 ENG 1 HT/LT RADIATOR FAN 2	D5/D6 BLDG	735.00	J.2/17.7/	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-467	0	/ D6 ENG 2 HT/LT RADIATOR FAN 1	D5/D6 BLDG	735.00	H.6/17.7/	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
9	232-468	0	/ D6 ENG 2 HT/LT RADIATOR FAN 2	D5/D6 BLDG	735.00	H.6/17.6/	735.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	074-031	0	/ 121A RELAY ROOM FAN-COIL UNIT	AUX	715.00	H.3/8.5 / RELAY RM	735.00	N/A	ABS	CRS	Yes	No	No	Yes	No
10	074-032	0	/ 121B RELAY ROOM FAN-COIL UNIT	AUX	715.00	G.7/8.5	735.00	N/A	ABS	CRS	Yes	No	No	Yes	No
10	074-033	0	/ 122A RELAY ROOM FAN-COIL UNIT	AUX	715.00	H.3/9.5	735.00	N/A	ABS	CRS	Yes	No	No	Yes	No
10	074-034	0	/ 122B RELAY ROOM FAN-COIL UNIT	AUX	715.00	G.7/9.5	735.00	N/A	ABS	CRS	Yes	No	No	Yes	No
10	174-051	0	/ 12 AUXILIARY FEEDWATER PUMP MOTOR FAN COIL UNIT	TURB	705.00	F.1/9.3	715.00	N/A	ABS	CRS	Yes	No	No	No	No
10	266-011	0	/ D5 1A INBOARD AIR AFTERCOOLER	D5/D6 BLDG	695.00	G.4/17.4/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-012	0	/ D5 1B INBOARD AIR AFTERCOOLER	D5/D6 BLDG	695.00	G.6/17.4/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-013	0	/ D5 2A INBOARD AIR AFTERCOOLER	D5/D6 BLDG	695.00	G.6/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-014	0	/ D5 2B INBOARD AIR AFTERCOOLER	D5/D6 BLDG	695.00	G.4/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-015	0	/ D6 1A INBOARD AIR AFTERCOOLER	D5/D6 BLDG	695.00	J.1/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-016	0	/ D6 1B INBOARD AIR AFTERCOOLER	D5/D6 BLDG	695.00	H.9/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-017	0	/ D6 2A INBOARD AIR AFTERCOOLER	D5/D6 BLDG	695.00	J.9/17.4/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-018	0	/ D6 2B INBOARD AIR AFTERCOOLER	D5/D6 BLDG	695.00	J.1/17.4/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes

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10	266-021	0	/ D5 1A OBRD AIR AFTERCOOLER	D5/D6 BLDG	695.00	G.4/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-022	0	/ D5 1B OBRD AIR AFTERCOOLER	D5/D6 BLDG	695.00	G.6/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-023	0	/ D5 2A OBRD AIR AFTERCOOLER	D5/D6 BLDG	695.00	G.6/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-024	0	/ D5 2B OBRD AIR AFTERCOOLER	D5/D6 BLDG	695.00	G.4/17.4/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-025	0	/ D6 1A OBRD AIR AFTERCOOLER	D5/D6 BLDG	695.00	J.1/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-026	0	/ D6 1B OBRD AIR AFTERCOOLER	D5/D6 BLDG	695.00	H.9/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-027	0	/ D6 2A OBRD AIR AFTERCOOLER	D5/D6 BLDG	695.00	H.9/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	266-028	0	/ D6 2B OBRD AIR AFTERCOOLER	D5/D6 BLDG	695.00	J.1/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
10	274-011	0	/ 21 CONTAINMENT FAN-COIL UNIT	CNTMT	715.00	29/270/	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	274-012	0	/ 22 CONTAINMENT FAN-COIL UNIT	CNTMT	715.00	22/320/	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	274-013	0	/ 23 CONTAINMENT FAN-COIL UNIT	CNTMT	733.00	12/15	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	274-014	0	/ 24 CONTAINMENT FAN-COIL UNIT	CNTMT	755.00	14/10	755.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	274-051	0	/ 21 AUXILIARY FEEDWATER PUMP MOTOR FAN-COIL UNIT	TURB	705.00		715.00	N/A	ABS	CRS	Yes	No	No	Yes	No
10	CD-34080	0	ZC / 21 FCU DISCH TO CNTMT DOME CD	CNTMT	737.00	IN DUCT 25/270	733.75	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	CD-34081	0	ZC / 21 FCU NORM DISCH TO GAP & STRUCT CD	CNTMT	741.00	IN DUCT 28/270	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	CD-34082	0	ZC / 22 FCU DISCH TO CNTMT DOME CD	CNTMT	742.00	IN DUCT 23/301	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	CD-34083	0	ZC / 22 FCU NORM DISCH TO GAP & STRUCT CD	CNTMT	740.00	IN DUCT 27/286	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
10	CD-34084	0	ZC / 23 FCU DISCH TO CNTMT DOME CD	CNTMT	763.00		755.00	N/A	ABS	CRS	No	Yes	Yes	Yes	No
10	CD-34085	0	ZC / 23 FCU NORM DISCH TO GAP & STRUCT CD	CNTMT	761.00		755.00	N/A	ABS	CRS	No	Yes	Yes	Yes	No
10	CD-34086	0	ZC / 24 FCU DISCH TO CNTMT DOME CD	CNTMT	777.00		755.00	N/A	ABS	CRS	No	Yes	Yes	Yes	No
10	CD-34087	0	ZC / 24 FCU NORM DISCH TO GAP & STRUCT CD	CNTMT	776.00		755.00	N/A	ABS	CRS	No	Yes	Yes	Yes	No
11	217-201	0	/ D5 1A L/O COOLER	D5/D6 BLDG	695.00	G.4/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-202	0	/ D5 1B L/O COOLER	D5/D6 BLDG	695.00	G.6/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes

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11	217-203	0	/ D5 2A L/O COOLER	D5/D6 BLDG	695.00	G.6/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-204	0	/ D5 2B L/O COOLER	D5/D6 BLDG	695.00	G.4/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-205	0	/ D6 1A L/O COOLER	D5/D6 BLDG	695.00	J.2/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-206	0	/ D6 1B L/O COOLER	D5/D6 BLDG	695.00	H.8/17.6/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-207	0	/ D6 2A L/O COOLER	D5/D6 BLDG	695.00	H.8/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-208	0	/ D6 2B L/O COOLER	D5/D6 BLDG	695.00	J.2/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-211	0	/ D5 ENG 1 GOV OIL COOLER	D5/D6 BLDG	695.00	G.5/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-212	0	/ D5 ENG 2 GOV OIL COOLER	D5/D6 BLDG	695.00	G.5/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-213	0	/ D6 ENG 1 GOV OIL COOLER	D5/D6 BLDG	695.00	J.0/17.7/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
11	217-214	0	/ D6 ENG 2 GOV OIL COOLER	D5/D6 BLDG	695.00	J.0/17.3/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
14	PNL 135	0	EX / AC DISTRIBUTION PANEL 135	AUX	695.00	H.2/6.4	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 136	0	EX / AC DISTRIBUTION PANEL 136	SSCRN	695.00	B1.8/81.3	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 137	0	EX / AC DISTRIBUTION PANEL 137	SSCRN	695.00	B1.6/91.8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 17	0	1DC / DC DISTRIBUTION PANEL 17	SSCRN	695.00	B1.5/81.3 NEAR 11 CL STRAIN	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 18	0	1DC / DC DISTRIBUTION PANEL 18	SSCRN	695.00	B1.5/91.7 NEAR 21 CL STRAIN	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 234	0	2EX / AC DISTRIBUTION PANEL 234	AUX	695.00	G.1/11.8 NEAR CHG PUMPS	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 235	0	2EX / AC DISTRIBUTION PANEL 235	AUX	695.00	H.5/11.7 NEAR CHG PUMPS	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 251	0	2DC / DC DISTRIBUTION PANEL 251	AUX	715.00	J.0/13.0 NEAR MCC 2L1	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 261	0	2DC / DC DISTRIBUTION PANEL 261	AUX	715.00	K.5/10.2 ENTRY TO VLV GALLE	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	PNL 262	0	2DC / DC DISTRIBUTION PANEL 262	AUX	715.00	K.O/11.5 NEAR MCC 2J2	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
16	28 INV	0	IP / 28 INVERTER	TURB	695.00	22 BATT RM	695.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes

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17	234-031	0	/ D5 DIESEL GENERATOR	D5/D6 BLDG	695.00	G.6/17.4/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
17	234-032	0	/ D6 DIESEL GENERATOR	D5/D6 BLDG	695.00	J.1/17.4/	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
18	17701	0	AF / 22 AFP LO DISCH PRESS TRIP PS	TURB	700.00	ON W SIDE WALL F.8/9.5	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	17705	0	AF / 22 AFP LO SUCT PRESS TRIP PS	TURB	700.00	ON W SIDE WALL F.8/9.5	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	17778	0	AF / 21 AFP LO DISCH PRESS TRIP PS	TURB	700.00	ON N SIDE WALL G.0/8.8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	17779	0	AF / 21 AFP LO SUCT PRESS TRIP PS	TURB	700.00	ON N SIDE WALL G.0/8.8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LE-751	0	1EM / 11 RX VSL HEAD TRN A HIGH VOL SENSOR	CNTMT	736.00	ON S POOL WALL 45/43	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LE-753	0	1EM / 11 RX VSL SEAL TABLE TRN A HIGH VOL SENSOR	CNTMT	729.00	ON W POOL WALL 32/31	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LE-761	0	1EM / 12 RX VSL HEAD TRN B HIGH VOL SENSOR	CNTMT	736.00	ON S POOL WALL 45/43	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LE-763	0	1EM / 12 RX VSL SEAL TABLE TRN B HIGH VOL SENSOR	CNTMT	729.00	ON W POOL WALL 33/31	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1LT-112	0	VC / 11 VOL CONT TNK LVL XMTR	AUX	720.00		715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1NM-51	0	NI / EXCORE DETECTION TRN A AMPLIFIER	AUX	739.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	1NM-52	0	NI / EXCORE DETECTION TRN B AMPLIFIER	AUX	739.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LE-751	0	EM / 21 RX VSL HEAD TRN A HIGH VOL SENSOR	CNTMT	736.00	ON NORTH POOL WALL 44/334	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LE-753	0	EM / 21 RX VSL SEAL TABLE TRN A HIGH VOL SENSOR	CNTMT	729.00	ON N POLL SIDE WALL 40/347	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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Frank Stilie	Frank B. Stilie	11/15/95

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18	2LE-761	0	EM / 22 RX VSL HEAD TRN B HIGH VOL SENSOR	CNTMT	736.00	ON N POOL WALL 44/334	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LE-763	0	EM / 22 RX VSL SEAL TABLE TRN B HIGH VOL SENSOR	CNTMT	729.00	ON N POOL WALL 40/347	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-112	0	VC / 21 VOL CONT TNK LVL XMTR	AUX	720.00		715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-920	0	2EM / 21 RWST LVL XMTR	AUX	700.00	ON W SIDE WALL J.3/13.8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-921	0	2EM / 21 RWST LVL XMTR	AUX	700.00	ON W SIDE WALL J.3/13.8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2NM-51	0	NI / EXCORE DETECTION TRN A AMPLIFIER	AUX	739.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2NM-52	0	NI / EXCORE DETECTION TRN B AMPLIFIER	AUX	739.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2PT-431	0	RP / 2 REAC CLNT LOOP PRZR (CHNNL III-BLU) P XMTR	CNTMT	720.00	ON W SIDE WALL 33/334	711.50	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2PT-468	0	2RP / 21 STM GEN MN STM HDR (CHNNL I-RED) P XMTR	AUX	735.00	CONTROL PANEL D-2	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2PT-478	0	2RP / 22 STM GEN MN STM HDR (CHNNL III-BLU) P XMTR	AUX	735.00	CONTROL PANEL D-2	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
19	1TE-450A	0	1EM / 1 REAC CLNT LOOP A HOT LEG RTD	CNTMT	723.00	IN 29 LINE 26/193	711.50	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2TE-450A	0	EM / 2 RC LOOP A HOT LEG RTD	CNTMT	723.00	IN 29 LINE 31/223	711.50	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2TE-451A	0	EM / 2 RC LOOP B HOT LEG RTD	CNTMT	723.00	IN 29 LINE 28/76	711.50	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
20	24MR	0	2MP / 24 MISCELLANEOUS RELAY RACK	AUX	735.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2B1	0	2RP / PROCESS PROTECTION RACK 2B1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2B2	0	2RP / PROCESS PROTECTION RACK 2B2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2FI-115B	0	2VC / 21 REAC CLNT PMP SL WTR INJ FI	AUX	720.00	ON S SIDE COL L.0/11.0	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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20	2FI-116B	0	2VC / 22 REAC CLNT PMP SL WTR INJ FI	AUX	720.00	ON S SIDE COL L.0/11.0	715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2NR3	0	2NI / NUCLEAR INSTRUMENTATION RACK 2NR3	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	2NR4	0	2NI / NUCLEAR INSTRUMENTATION RACK 2NR4	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	2PLP	0	RE / PROCESS CONTROL RACK 2PLP	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2R1	0	2RP / PROCESS PROTECTION RACK 2R1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2R2	0	2RP / PROCESS PROTECTION RACK 2R2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2RCS1	0	2RC / PROCESS CONTROL RACK 2RCS1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2RCS2	0	2RC / PROCESS CONTROL RACK 2RCS2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	70300	0	CL / 12 DD CLWP LCL PNL	SSCRN	695.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	70350	0	CL / 22 DD CLWP LCL PNL	SSCRN	695.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	70385	0	CL / 121 SFGDS TRAVELING SCRN DIFF CONT PNL	SSCRN	695.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	70386	0	CL / 122 SFGDS TRAVELING SCRN DIFF CONT PNL	SSCRN	695.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	B-2	0	2MP / CONTROL PANEL B-2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	B25/LOAD SEQ CAB	0	EA / BUS 25 SAFEGUARDS LOAD SEQUENCER CABINET	D5/D6 BLDG	718.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	B26/LOAD SEQ CAB	0	EA / BUS 26 SAFEGUARDS LOAD SEQUENCER CABINET	D5/D6 BLDG	718.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	C-2	0	2MP / CONTROL PANEL C-2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	D-2	0	2MP / CONTROL PANEL D-2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	D5/EXC PNL	0	E5 / D5 DSL GEN EXCITATION PANEL-SEVR	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	D5/GND CAB	0	E5 / D5 DSL GEN GROUND CABINET	D5/D6 BLDG	707.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes

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20	D5/RTU	0	E5 / D5 DSL GEN REMOTE TERMINAL UNIT CABINET	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	No	No
20	D5/RTV	0	E5 / D5 DSL GEN REMOTE TRANSMITTER & VIBRATION CABINET	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	D6/EXC PNL	0	E6 / D6 DSL GEN EXCITATION PANEL-SEVR	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	D6/GND CAB	0	E6 / D6 DSL GEN GROUND CABINET	D5/D6 BLDG	707.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	D6/RTU	0	E6 / D6 DSL GEN REMOTE TERMINAL UNIT CABINET	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	No	No
20	D6/RTV	0	E6 / D6 DSL GEN REMOTE TRANSMITTER & VIBRATION CABINET	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	E-2	0	2MP / CONTROL PANEL E-2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	F-1	0	BM / CONTROL PANEL F-1	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	F-2	0	2MP / CONTROL PANEL F-2	AUX	735.00	Control Room	735.00	Yes	BS	GRS	Yes	Yes	Yes	No	No
20	PNL 27	0	DC / DISTRIBUTION PANEL 27	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	PNL 28	0	DC / DISTRIBUTION PANEL 28	D5/D6 BLDG	695.00		695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	PNL 2EMA	0	EM / EVENT MONITORING RACK EM-A2	AUX	735.00	H.0/6.0 TRN A EVENT MON ROO	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	PNL 2EMB	0	EM / EVENT MONITORING RACK EM-A2	AUX	735.00	H.3/12.8 TRN B EVENT MON RO	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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5	145-201	0	AF / 11 TD AFW PUMP	TURB	695.00	F.5/8.3	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
5	145-331	0	AF / 12 MD AFW PUMP	TURB	695.00	F.5/9.4	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
5	245-201	0	/ 22 AUXILIARY FEEDWATER PUMP TURBINE DRIVEN	TURB	695.00	F.5/9.7/	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
7	AF-29-1	0	AF / 11 AUX FW PUMP SUCT RELIEF	TURB	695.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	AF-29-2	0	AF / 12 AUX FW PUMP SUCT RELIEF	TURB	695.00		715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31153	0	1AF / 11 TD AUX FW PMP RCRC/LUBE OIL CLG CV	TURB	702.00	IN 1 LINE F.5/8.2	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31154	0	1AF / 12 MD AUX FW PMP RCRC/LUBE OIL CLG CV	TURB	702.00	IN 1 LINE F.5/9.3	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31418	0	2AF / 21 MD AUX FW PMP RCRC/LUBE OIL CLG CV	TURB	715.00		735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
7	CV-31419	0	2AF / 22 TD AUX FW PMP RCRC/LUBE OIL CLG CV	TURB	715.00		735.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32025	0	1CL / 11 TD AFW PUMP SUCT CLG WTR SUPPLY MV	TURB	707.00	IN 4 LINE F.2/8.3	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32026	0	0CL / 21 MD AFW PUMP SUCT CLG WTR SUPPLY MV	TURB	707.00	IN 4 LINE F.2/8.5	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32027	0	1CL / 12 MD AFW PUMP SUCT CLG WTR SUPPLY MV	TURB	707.00	IN 4 LINE F.2/9.5	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32030	0	0CL / 22 TD AFW PUMP SUCT CLG WTR SUPPLY MV	TURB	707.00	IN 4 LINE F.2/9.7	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	MV-32381	0	1AF / 12 AFWP DSCH TO 11 STM GEN MV	TURB	703.00	IN 3 LINE F.9/8.5	715.00	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
14	PNL 11	0	1DC / DISTRIBUTION PANEL 11	TURB	695.00	C.9/8.8 11 BATTERY ROOM	695.00	Yes	BS	GRS	Yes	No	No	Yes	No
14	PNL 132	0	EX / AC DISTRIBUTION PANEL 132	TURB	695.00	E.8/9.1 NEAR 123 AIR COMPR	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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14	PNL 133	0	EX / AC DISTRIBUTION PANEL 133	TURB	695.00	E.8/8.9 NEAR 122 AIR COMPR	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	17700	0	AF / 11 AFP LO DISCH PRESS TRIP PS	TURB	700.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	17704	0	AF / 11 AFP LO SUCT PRESS TRIP PS	TURB	700.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	17776	0	AF / 12 AFWP LO SUCT PRESS TRIP PS	TURB	700.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	17777	0	AF / 12 AFP LO DISCH PRESS TRIP PS	TURB	700.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	18037	0	AF / AUX FW TO 21 STM GEN FI	AUX	695.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	18039	0	AF / AUX FW TO 22 STM GEN FI	AUX	695.00		695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-426	0	2RC / 2 REAC CLNT LOOP PRZR (CHNNL I-RED) LVL XMTR	CNTMT	720.50	ON N SIDE WALL GRID 19/351	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-428	0	2RC / 2 REAC CLNT LOOP PRZR (CHNNL III-BLU)LVL XMTR	CNTMT	720.50	ON W SIDE WALL GRID 33/334	733.75	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-487	0	2EM / 21 STM GEN LOOP A WR LVL XMTR	CNTMT	716.00	ON SHLD WALL GRID 14/240	711.50	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-488	0	2EM / 22 STM GEN LOOP B WR LVL XMTR	CNTMT	716.00	ON SHLD WALL GRID 10/60	711.50	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-751	0	EM / 21 RX VSL HEAD UPPER RNG TRN A D/P XMTR	AUX	735.00	ON INST RACK J.5/13.4	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-753	0	EM / 21 RX VSL HEAD DYNAMIC RNG TRN A D/P XMTR	AUX	735.00	ON INSTR RACK J.5/13.4	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-761	0	EM / 22 RX VSL HEAD UPPER RNG TRN B D/P XMTR	AUX	735.00	ON INSTR RACK J.5/13.8	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2LT-763	0	EM / 22 RX VSL HEAD DYNAMIC RNG TRN B D/P XMTR	AUX	735.00	ON INSTR RACK J.5/13.8	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2PT-429	0	2RP / 2 REAC CLNT LOOP PRZR (CHNNL I-RED) P XMTR	CNTMT	720.50	ON N SIDE WALL GRID 19/351	711.50	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1ICCM-PDA	0	/ ICCM UNIT 1 TRAIN A PLASMA DISPLAY	AUX	735.00	G.2/8.0 CONTROL ROOM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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20	1ICCM-PDB	0	/ ICCM UNIT 1 TRAIN B PLASMA DISPLAY	AUX	735.00	G.2/8.0 CONTROL ROOM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1LM-750	0	/ ICCM UNIT 1 TRAIN A MICROPROCESSOR 1LM-750	AUX	735.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	1LM-760	0	/ ICCM UNIT 1 TRAIN B MICROPROCESSOR 1LM-760	AUX	735.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2AMR1	0	2RP / MISCELLANEOUS RELAY RACK 2AMR1	AUX	715.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2ASG1	0	2RP / SAFEGUARD RELAY RACK 2ASG1	AUX	715.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2ASG2	0	2RP / SAFEGUARD RELAY RACK 2ASG2	AUX	715.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2BSG1	0	2RP / SAFEGUARD RELAY RACK 2BSG1	AUX	715.00		715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2BSG2	0	2RP / SAFEGUARD RELAY RACK 2BSG2	AUX	715.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2ICCM-PDA	0	/ ICCM UNIT 2 TRAIN A PLASMA DISPLAY	AUX	735.00	G.2/10.0 CONTROL ROOM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2ICCM-PDB	0	/ ICCM UNIT 2 TRAIN B PLASMA DISPLAY	AUX	735.00	G.2/10.0 CONTROL ROOM	735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2LM-750	0	/ ICCM UNIT 2 TRAIN A MICROPROCESSOR 2LM-750	AUX	735.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	2LM-760	0	/ ICCM UNIT 2 TRAIN B MICROPROCESSOR 2LM-760	AUX	735.00		735.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	50000	0	D5 / D5 DSL GEN BENCHBOARD	D5/D6 BLDG	695.00	H.0/17.1	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	50200	0	D5 / D5 DSL GEN VERTICAL PANEL	D5/D6 BLDG	695.00	H.0/16.9	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	55300	0	D1 / D1 DSL GEN ENG/GEN PANEL (EGP)	TURB	695.00	KA.4/2.8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	55320	0	D5 / D5 DSL GEN ENG 1 AUX DESK	D5/D6 BLDG	695.00	H.0/17.3	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	55410	0	D1 / D1 REMOTE CONTROLS ISOLATION PANEL	TURB	698.00	LA.1/3.0 ON W WALL	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	55420	0	D5 / D5 DSL GEN ENG 2 AUX DESK	D5/D6 BLDG	695.00	H.0/17.5	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	55800	0	D2 / D2 DSL GEN ENG/GEN PANEL (EGP)	TURB	695.00	HA.8/2.8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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Print or Type Name	Signature	Date
Gerry Gore	G Gore	11/16/95
Walter Djordjevic	W Djordjevic	11/15/95

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Print or Type Name	Signature	Date

Eq Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK?	Equip OK?
20	55820	0	D6 / D6 DSL GEN ENG 1 AUX DESK	D5/D6 BLDG	695.00	H.5/17.5	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	55920	0	D6 / D6 DSL GEN ENG 2 AUX DESK	D5/D6 BLDG	695.00	H.5/17.3	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	60000	0	D6 / D6 DSL GEN BENCHBOARD	D5/D6 BLDG	695.00	H.6/17.1	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	60200	0	D6 / D6 DSL GEN VERTICAL PANEL	D5/D6 BLDG	695.00	H.7/16.9	695.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	B16/LOAD SEQ CAB	0	EA / BUS 16 SAFEGUARDS LOAD SEQUENCER CABINET	TURB	715.00		715.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	B25/AUX RELAY CAB	0	EA / BUS 25 AUXILIARY RELAY CABINET	D5/D6 BLDG	718.00	H.3/16.3	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	B26/AUX RELAY CAB	0	EA / BUS 26 AUXILIARY RELAY CABINET	D5/D6 BLDG	718.00	H.7/16.3	718.00	N/A	DOC	RRS	Yes	Yes	Yes	Yes	Yes
20	TB 1203	0	ED / RELAY ROOM AUX RELAY CABINET	AUX	715.00	G/8	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	TB 1209	0	ED / RELAY ROOM TERMINAL BOX	AUX	715.00	H/8	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	TB 1243	0	ED / TB FOR 12 CHARGING PUMP	AUX	695.00	G/7	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	TB 1244	0	ED / TB FOR 11 CHARGING PUMP	AUX	695.00	G/7	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	TB 2209	0	ED / RELAY ROOM AUX RELAY CABINET	AUX	715.00	H/10	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	TB 2222	0	ED / RELAY ROOM TERMINAL BOX	AUX	715.00	H/10	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	TB 2229	0	ED / RELAY ROOM TERMINAL BOX	AUX	715.00	J/10	715.00	N/A	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	TB 2480	0	ED / TB FOR 21 CHARGING PUMP	AUX	695.00	H/11	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	TB 2481	0	ED / TB FOR 22 CHARGING PUMP	AUX	695.00	H/11	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
20	TB A1640	0	ED / 11 TD AUX FEEDWATER PUMP RELAY CABINET	AUX	695.00	G/8	695.00	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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Gerry Gore	G Gore	11/16/95
Walter Djordjevic	[signature]	11/15/95

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Print or Type Name	Signature	Date

Eq. Cl	Eq. ID	Rev No	Sys/Eq. Desc	Bldg.	Fl El.	Rm or Rw/Cl	Base El.	<40'?	Cap. Spec.	Demd. Spec	Cap > Demd?	Caveats OK?	Anchor OK?	Interact OK?	Equip OK?
8	SV-37460	0	ZX / UNIT 1 TRAIN A CHILL WTR/CLG WTR ISOL SV	CNTMT	749.00	13/330	733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-37461	0	ZX / UNIT 1 TRAIN B CHILL WTR/CLG WTR ISOL SV	CNTMT	728.00		733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-37466	0	ZX / UNIT 2 TRAIN A CHILL WTR/CLG WTR ISOL SV	CNTMT	739.00	19.9/35	733.75	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
8	SV-37467	0	ZX / UNIT 2 TRAIN B CHILL WTR/CLG WTR ISOL SV	CNTMT	759.00	19.9/35	755.00	N/A	ABS	CRS	No	Yes	N/A	Yes	No
10	CD-34076	0	ZC / 13 FCU DISCH TO CNTMT DOME CD	CNTMT	775.00	IN DUCT 10/310	755.00	N/A	ABS	CRS	No	Yes	Yes	Yes	No
10	CD-34077	0	ZC / 13 FCU NORM DISCH TO GAP & STRUCT CD	CNTMT	779.00	IN DUCT 15/308	755.00	N/A	ABS	CRS	No	Yes	Yes	Yes	No
10	CD-34078	0	ZC / 14 FCU DISCH TO CNTMT DOME CD	CNTMT	758.00	IN DUCT 8/332	755.00	N/A	ABS	CRS	No	Yes	Yes	Yes	No
10	CD-34079	0	ZC / 14 FCU NORM DISCH TO GAP & STRUCT CD	CNTMT	762.00	IN DUCT 9/340	755.00	N/A	ABS	CRS	No	Yes	Yes	Yes	No

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Print or Type Name	Signature	Date
Gerry Gore	G Gore	11/16/95
Mark McKeown	Mark V. McKeown	11-16-95

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