ATTACHMENT 2

PALISADES SEISMIC WALKDOWN REPORT

FOR RESOLUTION OF FUKUSHIMA NEAR-TERM TASK FORCE

RECOMMENDATION 2.3: SEISMIC

664 pages follow

Entergy

ENTERGY NUCLEAR
Engineering Report Cover Sheet

Engineering Report Title:

Palisades Seismic Walkdown Report for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic

Engineering Report Type:

New ☒ Revision ☐ Cancelled ☐ Superseded ☐
Superseded by: _____

Applicable Site(s)

IP1	☐	IP2	☐	IP3	☐	JAF	☐	PNPS	☐	VY	☐	WPO	☐
ANO1	☐	ANO2	☐	ECH	☐	GGNS	☐	RBS	☐	WF3	☐	PLP	☒

EC No. 40453

Report Origin: ☐ Entergy ☒ Vendor
Vendor Document No.: N/A

Quality-Related: ☐ Yes ☒ No

Prepared by: Kevin Bessell (ENERCON) Date: 11/15/2012

Reviewed by: Alex Smerch (ENERCON) Date: 11/15/2012

Reviewed by: Chuck Netzel (ENERCON) Date: 11/15/2012
(Peer Review Team Leader)

Approved by: D.J. Fitzgibbon Date: 11/15/2012
(Design Engineering Manager)

Approved by: P.D. MacMaster Date: 11-15-2012
(Design Engineering Supervisor)

Palisades Seismic Walkdown Report

for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic

TABLE OF CONTENTS

1.0 SCOPE AND OBJECTIVE

The Great Tohoku Earthquake of March 11, 2011 and the resulting tsunami caused an accident at the Fukushima Dai-ichi nuclear power plant in Japan. In response to this accident, the Nuclear Regulatory Commission (NRC) established the Near-Term Task Force (NTTF). The NTTF was tasked with conducting a systematic and methodical review of NRC processes and regulations and determining if the agency should make additional improvements to its regulatory system. On March 12, 2012 the NRC issued a 10CFR50.54(f) Letter [Ref. 1] requesting information from all licensees to support the NRC staff's evaluation of several of the NTTF recommendations. To support NTTF Recommendation 2.3, Enclosure 3 to the 50.54(f) Letter requested that all licensees perform seismic walkdowns to gather and report information from the plant related to degraded, non-conforming, or unanalyzed conditions with respect to its current seismic licensing basis.

The Electric Power Research Institute (EPRI), with support and direction from the Nuclear Energy Institute (NEI), published industry guidance for conducting and documenting the seismic walkdowns which represented the results of extensive interaction between NRC, NEI, and other stakeholders. This industry guidance document, EPRI Report 1025286 [Ref. 2], hereafter referred to as "*the Guidance*," was formally endorsed by the NRC on May 31, 2012. Palisades Nuclear Plant has committed to using this NRC-endorsed guidance as the basis for conducting and documenting seismic walkdowns for resolution of NTTF Recommendation 2.3: Seismic.

The objective of this report is to document the results of the seismic walkdown effort undertaken for resolution of NTTF Recommendation 2.3: Seismic in accordance with the Guidance, and provide the information necessary for responding to Enclosure 3 to the 50.54(f) Letter. This information includes, but not limited to, identification of potentially adverse seismic conditions and the associated assessment, and disposition of, functionality/operability of the affected components.

2.0 SEISMIC LICENSING BASIS SUMMARY

Palisades Nuclear Plant is a pressurized water reactor (PWR) located in Covert, Michigan. The Nuclear Steam Supply System (NSSS) was originally designed and supplied by Combustion Engineering, Inc., with Bechtel Corporation and its affiliate, Bechtel Company, engaged to supply and design the balance of the plant equipment, systems and structures. Palisades Nuclear Plant began commercial operation on December 31, 1971 and is currently rated at 2,565.4 MWt power [Ref. 3]. This section summarizes the seismic licensing basis of structures, systems and components (SSCs) at Palisades Nuclear Plant which bound the context of the NTTF 2.3 Seismic Walkdown program. It shall be noted that seismic classification as it applies to Palisades Nuclear Plant is defined in the FSAR, Section 5.2. SSCs may be referred to as a Design Class throughout this document as it pertains to information contained in the FSAR.

2.1 SAFE SHUTDOWN EARTHQUAKE (SSE)

The design earthquake, which is equivalent to the Operating Basis Earthquake (OBE), for the Palisades Nuclear Plant is described by a Housner spectra anchored at 0.1g peak horizontal ground acceleration with the vertical acceleration taken as two-thirds (2/3) of the corresponding horizontal ground acceleration. The horizontal ground design spectrum for the safe shutdown earthquake is obtained by multiplying values from the OBE spectrum by a factor of two [Ref. 3].

2.2 DESIGN CODES, STANDARDS, AND METHODS

2.2.1 Design of Seismic Category I SSCs

Components were classified according to fundamental natural frequency and dynamic degrees of freedom, and an analysis was performed as discussed below. Most components were analyzed using Method 1 below.

1. A component with a fundamental natural frequency greater than 33 Hz was classified as rigid, and a static analysis was performed using the high-frequency asymptote of the floor response spectrum.
2. A component with a fundamental natural frequency less than 33 Hz and a single significant dynamic degree of freedom was analyzed statically using the spectral acceleration at the equipment frequency for the appropriate equipment damping.
3. A component with a fundamental natural frequency less than 33 Hz and multiple degrees of freedom was analyzed by the modal response spectrum method.

4. If the fundamental frequency of the component was unknown and the building analysis was available, the peak value from the floor response spectrum was used in a static analysis. However, if the building analysis was not available, a conservative acceleration was assumed for use in a static analysis.

2.2.2 Seismic Analysis and Testing of SSCs

Components procured prior to January 1979 were either analyzed as described in Subsection 2.2.1 or tested for qualification acceleration levels exceeding the specification levels. Most components were either proven or assumed to be seismically rigid. Components procured after January 1979 were analyzed or tested in accordance with one of several Bechtel specifications. These specifications all contain the following requirements in common:

1. Only the first three analytical methods described in Subsection 2.2.1, which require identification of component fundamental natural frequency, were used. A component with a natural frequency exceeding 33 Hz was considered to be rigid.
2. The minimum variation in natural frequency due to uncertainties in material and geometric properties was ± 10%. The worst spectral acceleration for this range was used.
3. Combination of modes for flexible multidegree of freedom systems was in accordance with the NRC Regulatory Guide 1.92 "Grouping" method.
4. Testing was performed in accordance with IEEE Standard 344-1975 using the required response spectrum provided with the specification. In all cases, the Test Response Spectrum (TRS) was required to envelope the Required Response Spectrum (RRS).
5. Floor response spectra were provided in the specification for the OBE and doubled to obtain SSE values.

After 1988, all modifications and replacements of Seismic Category I equipment which could be procured and qualified in accordance with the following standards which are applicable to the type of equipment.

1. IEEE Standard 344-1975 and RG 1.100, Rev 1.
2. IEEE Standard 382-1980 for qualification of valve actuators.
3. ANSI C16.41-1983 for qualification of rigid valve actuators and valve assemblies.

4. ANSI C37.98-1978 for qualification of relays, starters and similar equipment.
5. IEEE Standard 649-1980 for qualification of motor control centers.
6. Material damping ratios for analysis are in accordance with FSAR Table 5.7-2.
7. Load, load combinations and allowable stress for analysis are in accordance with FSAR 5.10.1.3.
8. Modal response summation using the response spectrum analysis method is in accordance with RG 1.92, Rev 1.
9. Equipment response due to three components of earthquake motion in a dynamic analysis are summed using the RG 1.92, Rev 1 methods; or, the larger response of each horizontal analysis is combined separately with the vertical analysis response in accordance with the FSAR, Section 5.7.2.
10. Modal testing methods such as the normal mode method or the transfer function method may be used to determine the resonant frequencies, mode shapes, modal damping, etc., of the dynamic characteristics of a complex structure.
11. The use of power spectral density (PSD) analysis to evaluate the response of a piece of equipment at a certain location may be used if determined applicable and approved.
12. In lieu of the above-mentioned methods, verification of equipment ruggedness may be developed using seismic experience, in accordance with the methodology developed by the Seismic Qualification Utility Group (SQUG) and as validated by the NRC Safety Evaluation Report for the SQUG Generic Implementation Procedure (GIP) Revision 2.
13. Input motion is determined in accordance with the ground response spectra delineated in the FSAR, Section 5.7.1.2. The floor response spectra is developed using the ground response spectra as described in the FSAR, Section 5.7.1.3.

2.2.3 Seismic Qualification of Electrical Equipment

Class 1E electrical equipment and instrumentation purchase specifications seismic acceleration levels are shown in FSAR, Table 5.7-7. Class 1E designation applies to electric equipment and systems that are essential to emergency reactor shutdown, containment isolation, reactor core cooling, and containment and reactor heat removal, or are otherwise essential in preventing significant release of radioactive material to the environment.

A sufficient amount of conservatism was incorporated into some equipment specifications to preclude malfunctions due to seismic loads. For example, the Reactor Protective System was qualified for a 0.8 g horizontal seismic acceleration. This is well above the specification level.

As part of the Nuclear Regulatory Commission's (NRC) Systematic Evaluation Program (SEP), the anchorage and support of safety-related electrical components were investigated in 1980 for adequacy during an SSE event and modifications were subsequently made as necessary, see FSAR, Section 5.10.3.3.

Seismic Category I and Class 1E electrical equipment and raceways are listed in FSAR, Table 5.2-4. Electrical equipment anchorage and raceway supports for the components listed in that table have been redesigned in the period 1979 to 1981 as Seismic Category I as defined in Regulatory Guide 1.29. Seismic adequacy of safety-related electrical components is determined by resolution of NRC Generic Letter 87-02 "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue A-46."

2.2.4 Codes and Industry Standards

In general, Design Class I structures are designed to maintain elastic behavior when subjected to various combinations of dead loads, accident loads, thermal loads and wind or seismic loads. The upper limit of elastic behavior was considered to be yield strength of the effective load-carrying structural materials.

Safety related structural steel is designed in accordance with American Institute of Steel Construction (AISC), Manual of Steel Construction, 6th Edition, 1963. Beginning in 1989, Design Class I structures were designed in accordance with the 8th Edition, 1980.

Safety related concrete is designed in accordance with the American Concrete Institute ACI 318-63, Building Code Requirements for Reinforced Concrete.

All piping systems and components were designed, fabricated, tested and inspected to the requirements of all applicable portions of the following standards and codes as minimum requirements:

- ASME Boiler and Pressure Vessel Code, Sections I, II, III and IX
- ASA Code for Pressure Piping (ASA B31.1 and ASA B16.5) including applicable Nuclear Code Cases
- ASTM Standards

- PFI Standards

The work, equipment and materials for the original Plant HVAC system design conform to the requirements and recommendations of the following codes and standards as applicable:

- The work and materials conform to the American Society of Heating, Refrigeration and Air Conditioning Engineers Guide (ASHRAE).
- The fans conform to the Air Moving and Conditioning Association, Inc., standards, definitions, terms and test codes for centrifugal, axial and propeller fans.
- The work, equipment and materials conform to the National Fire Protection Association Pamphlet 90A, "Air Conditioning, Warm Air Heating, Air Cooling Ventilating System."

The work, equipment and materials for the control room HVAC modifications made in 1983 conform to the requirements and recommendations of the following additional guides, codes and standards, as applicable:

- Ventilation ductwork conforms to applicable sections of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) manual.
- Refrigerant cooling coils conform to the standards of the Air Conditioning and Refrigeration Institute (ARI) and to requirements for Seismic Category I equipment.
- Applicable components and controls conform to the requirements of Underwriters Laboratories (UL), the National Electric Manufacturers Association (NEMA) and the Institute of Electrical and Electronics Engineers (IEEE) Standards 323, 344 and 383.
- Charcoal filter units and the associated ductwork, dampers and controls conform to the applicable sections of American National Standard Institute (ANSI) Standard 509-1980 and Standard 510-1980.

Control room dampers D-1, D-2, D-8, D-9, D-15, and D-16 are bubble-tight dampers that conform to the applicable sections of American Society of Mechanical Engineers (ASME) AG-1, Code on Nuclear Air and Gas Treatment.

3.0 SEISMIC WALKDOWN PROGRAM IMPLEMENTATION APPROACH

Palisades Nuclear Plant has committed to conduct and document seismic walkdowns for resolution of NTTF Recommendation 2.3: Seismic in accordance with the EPRI Seismic Walkdown Guidance [Ref. 2]. The approach provided in the Guidance for addressing the actions and information requested in Enclosure 3 to the 50.54(f) Letter includes the following activities, the results of which are presented in the sections shown in parenthesis:

- Assignment of appropriately qualified personnel (Section 4.0)
- Reporting of actions taken to reduce or eliminate the seismic vulnerabilities identified by the Individual Plant Examination of External Events (IPEEE) program (Section 5.0)
- Selection of structures, systems and components (SSCs) to be evaluated (Section 6.0)
- Performance of the seismic walkdowns and area walk-bys (Section 7.0)
- Evaluation and treatment of potentially adverse seismic conditions with respect to the seismic licensing basis of the plant (Section 8.0)
- Performance of peer reviews (Section 9.0)

The coordination and conduct of these activities was initiated and tracked by Entergy Nuclear Operations, Inc. (ENO), which provided guidance to each Entergy site throughout the seismic walkdown program, including Palisades Nuclear Plant. A procedure, EN-DC-168 [Ref. 19], was developed to help implement the Guidance requirements and to ensure consistency across the Entergy nuclear fleet. ENO contracted with an outside nuclear services company to provide engineering and project management resources to supplement and assist each individual site. Each site had dedicated engineering contractors, supported by their own project management and technical oversight, who worked closely with plant personnel.

4.0 PERSONNEL QUALIFICATIONS

The NTTF 2.3 Seismic Walkdown program involved the participation of numerous personnel with various different responsibilities. This section identifies the project team members and their project responsibilities and provides brief experience summaries for each. The training certificates for the Seismic Walkdown Engineers and/or SQUG certifications, necessary to perform the walkdowns, are included in Attachment H.

Table 4-1 summarizes the names and responsibilities of personnel used to conduct the seismic walkdowns. Experience summaries of each person follow.

Name	Equipment Selection Personnel	Seismic Walkdown Engineer	Licensing Basis Reviewer	IPEEE Reviewer
Al Lyon	X	X		X
Brian Brogan	X			
Eric Tiffany	X			
David Kennedy	X			
Robert White[1]	X			
Tim Crocker		X	X	
Alex Smerch (ENERCON)[2]		X		
Kevin Bessell (ENERCON)		X	X	
Paul Klein (ENERCON)		X		
John Kao (ENERCON)		X		

Table 4-1

Notes:

1. Plant operations representative
2. Designated lead SWE

Al Lyon

Mr. Al Lyon is a senior staff engineer for Entergy Nuclear at Palisades Nuclear Plant. Mr. Lyon is a civil/structural engineer by degree with over 30 years of experience in the nuclear industry. He has served roles as the technical lead for piping and pipe support design engineering and as a design engineer for seismic and flooding. Mr. Lyon is an EPRI trained SQUG Seismic Capability Engineer and Fukushima NTTF Recommendation 2.3 Seismic Walkdown Engineer.

Brian Brogan

Mr. Brian Brogan is a senior staff engineer for Entergy Nuclear at Palisades Nuclear Plant responsible for probabilistic risk assessment (PRA). Mr. Brogan has extensive experience in the nuclear industry related to PRA, plant thermal/hydraulic support, and nuclear safety and Chapter 14 and 15 licensing analysis.

Eric Tiffany

Mr. Eric Tiffany is a Senior Engineer in the System Engineering Department for Entergy Nuclear at Palisades Nuclear Plant. He holds a Bachelor Degree in Mechanical Engineering from Michigan State University and a Master Degree in Business Administration from Western Michigan University. Mr. Tiffany has over 30 years of experience at Palisades Nuclear Plant including Maintenance Rule Coordinator since 1993, Nuclear Insurance Boiler & Machinery Plant Contact since 1993, INPO EPIX (Equipment and Performance Information Exchange) Coordinator since 1998, Maintenance Rule Structure Monitoring Coordinator in the late 1990's, and System/Program Health Assessment Process Owner in the early 2000's. He has been involved in previous Palisades' system and equipment risk ranking efforts associated with Maintenance Rule System/Function Safety Significance, Risk-Informed In-Service Inspection Program, Motor Operated Valve Program, and Air-Operated Valve Program.

David Kennedy

Mr. David Kennedy is an Electrical Design Engineer for Entergy Nuclear at Palisades Nuclear Plant. He has over 35 years of nuclear power generation experience. His broad experience includes reactor engineering, instrument and control maintenance engineering, and design engineering activities associated with electrical and instrument and control projects. Mr. Kennedy is a licensed professional engineer in the State of Michigan.

Robert White

Mr. Robert White is the Assistant Operations Manager for Entergy Nuclear at Palisades Nuclear Plant. He has a Bachelor's Degree in Chemical Engineering from the University of Illinois. He has over 30 years of experience in the nuclear industry as a design engineer, project manager, and within the operations area. He was the Project Manager for the original IPEEE submittal before joining the Operations organization and becoming a Licensed Senior Reactor Operator. He has been in Operations for the past 10 years in various positions of responsibility.

Timothy Crocker

Mr. Timothy Crocker is a Civil/Structural Engineer for Entergy Nuclear at Palisades Nuclear Plant. He has over 6 years of experience, of which 4 years have been at Palisades. His experience includes the design and build of the "A" Cooling Tower, design of the Reactor Cavity Floor Permanent Shielding and design of the tornado missile protection for the Fuel Oil Storage Tank. Tim has also performed in a supervisory role during refueling outages. Mr. Crocker is an EPRI trained Fukushima NTTF Recommendation 2.3 Seismic Walkdown Engineer and is a licensed professional engineer in the state of Michigan.

Alex Smerch

Mr. Alex Smerch is a Civil/Structural Engineer in ENERCON's Naperville, IL office and is the lead Seismic Walkdown engineer for the project. He has over 3 years of experience performing structural analysis and design in the power and industrial industries. His experience includes developing and analyzing finite element models using a variety of software to aid the design of numerous structural components and systems. He is experienced in preparing design calculations and analysis of concrete and steel structures, conducting dynamic analyses of structures to resist seismic and hydrodynamic loads, designing various structural support systems to comply with regulations and restrictions at nuclear facilities, and performing computer programming to post-process and expedite the analysis results from software based design aids. Mr. Smerch is an EPRI trained Fukushima NTTF Recommendation 2.3 Seismic Walkdown Engineer and has trained over 15 individuals.

Kevin Bessell

Mr. Kevin Bessell is the Lead Civil/Structural Engineer in ENERCON's Naperville, IL office. He has over 12 years of experience, of which 4 years are in the nuclear industry. Mr. Bessell recently completed the seismic analysis of the Fuel Handling Building at Zion Nuclear Power Station in support of the upgrade of the overhead bridge crane. In addition, he provided oversight for the cask set down safe load path evaluations and stack-up seismic restraint

design. Mr. Bessell has experience in linear time history and response spectrum dynamic analyses as well as equivalent static method analysis of decoupled subsystems. Mr. Bessell is an EPRI trained Fukushima NTTF Recommendation 2.3 Seismic Walkdown Engineer and has trained over 30 individuals. He is a licensed structural engineer in the state of Illinois and a licensed professional engineer in the state of Illinois and Wisconsin.

Paul Klein

Mr. Paul Klein is a Civil/Structural Engineer, sub-contracted by ENERCON, with over 30 years of work experience. Mr. Klein is a managing partner of a civil, structural and mechanical engineering firm. His responsibilities include engineering, design and design review for commercial and industrial facilities, site development, pumps and piping systems, and bulk conveying systems. Paul has also provided engineering and construction support for the 10CFR73.55 modifications at Palisades Nuclear Plant. Mr. Klein is a trained Fukushima NTTF Recommendation 2.3 Seismic Walkdown Engineer and is a licensed professional engineer in the state of Michigan, Ohio, Indiana and Wisconsin.

John Kao

Mr. John Kao is a Civil/Structural Engineer, sub-contracted by ENERCON, with over 34 years of work experience, the majority of which has been in nuclear. John has expertise in diverse areas of structural analysis and design, as well as some areas of civil engineering. Over the past 9 years at a utility company, Mr. Kao has served as a manager for small transmission and substation projects as well as performed the engineering for these projects. John has been the lead structural engineer for a leading consulting firm in the power industry and was responsible for the analysis and design of structural steel structures, pipe supports, writing design criteria and coordinating field work. Mr. Kao is an EPRI trained SQUG Seismic Capability Engineer. He is a licensed structural engineer and professional engineer in the state of Illinois.

4.1 EQUIPMENT SELECTION PERSONNEL

A total of 5 individuals served as Equipment Selection Personnel – see Table 4-1.

4.2 SEISMIC WALKDOWN ENGINEERS

A total of 6 individuals served as Seismic Walkdown Engineers – see Table 4-1.

4.3 LICENSING BASIS REVIEWERS

A total of 2 individuals served as Licensing Basis Reviewers – see Table 4-1.

4.4 IPEEE REVIEWERS

A total of 1 individual served as an IPEEE Reviewer – see Table 4-1.

4.5 PEER REVIEW TEAM

Table 4-2 summarizes the names and responsibilities of personnel used to conduct the seismic walkdown peer reviews. Experience summaries follow for those individuals not previously listed in Table 4-1. For those individuals already listed in Table 4-2, please refer to Section 4.0.

Name	SWEL Peer Reviewer	Walkdown Peer Reviewer	Licensing Basis Peer Reviewer	Submittal Report Peer Reviewer
Al Lyon[2]		X		
Timothy Crocker[2]		X		
Dave MacMaster			X	X
Candice Chou (ENERCON)	X			
Charles Netzel (ENERCON)[1]	X	X	X	X
Alex Smerch (ENERCON)[2]				X

Table 4-2

Notes:
1. Peer Review Team Leader
2. Biographies provided in Section 4.0

<u>David MacMaster</u>

Mr. David MacMaster is a Mechanical and Civil Design Engineering Supervisor for Entergy Nuclear at Palisades Nuclear Plant. He has over 20 years of nuclear power generation experience, of which 5 years have been at Palisades. His broad experience includes design engineering activities associated with airlocks and containment and also systems engineering experience for nuclear systems in the Canadian nuclear power industry. He was a senior design engineer at Palisades prior to being promoted to engineering supervisor in 2010. His supervisory role at Palisades has included design engineering oversight to the "A" Cooling Tower replacement project, the Moisture Separator Replacement project and the Spent Fuel Pool Re-rack project. Mr. MacMaster is a licensed professional engineer in the province of Ontario.

Candice Chou

Ms. Candice Chou is a Nuclear Engineer in ENERCON's Naperville, IL office. She has over 23 years of experience in the nuclear industry consisting of 17 years of engineering analysis and 6 years of engineering management experience. Ms. Chou has an extensive knowledge and experience in BWR and PWR reactor safety analyses including design basis accidents (DBAs) and anticipated operational occurrences (AOOs). She has performed analyses using AREVA, GNF, and Westinghouse methods and was awarded PWR SRO Certification from Braidwood Station in 2008.

Charles Netzel

Mr. Charles Netzel is a Civil/Structural Engineer and Project Manager in ENERCON's Naperville, IL office. Mr. Netzel has over 28 years of experience in the nuclear industry. Mr. Netzel has designed, built and provided plant modifications for most of the nuclear power plants operating in the Midwest. Mr. Netzel has had more recent experience at Point Beach Nuclear Plant on the 1X-04 Cable Bridge Project and Grass Fouling for RE-216 and various Security related projects. Mr. Netzel has been involved with the 10CFR73.55 security modifications and the Spent Fuel Pool Re-Rack project at Palisades Nuclear Station. Mr. Netzel is a licensed structural engineer in the state of Illinois.

5.0 IPEEE VULNERABILITIES REPORTING

During the IPEEE program in response to NRC Generic Letter 88-20, Supplement 4 [Ref. 4], plant-specific seismic vulnerabilities were identified at many plants. In this context, "vulnerabilities" refers to conditions found during the IPEEE program related to seismic anomalies, outliers, or other findings.

The IPEEE Reviewer (see Section 4.0) reviewed the IPEEE final report [Ref. 5] and supporting documentation to identify items determined to present a seismic vulnerability by the IPEEE program. IPEEE Reviewers then reviewed additional plant documentation to identify the eventual resolutions to those seismic vulnerabilities that had not been resolved by the completion of the IPEEE program.

The Nov. 29, 1999, Staff Evaluation Report (SER) from the NRC [Ref. 9] on Palisades IPEEE Submittal for the Resolution of Generic Letter 88-20, Supplement 4, cites the following correspondence to the NRC:

- Palisades' Original IPEEE Submittal – June 30, 1995 [Ref. 5]
- Palisades' Revised IPEEE Submittal – May 31, 1996 [Ref. 8]
- NRC IPEEE Request for Additional Information (RAI) – June 14, 1996, and March 4, 1998 [Ref. 10] [Ref. 11]
- IPEEE RAI Responses – September 30, 1996, and July 2, 1998 [Ref. 12] [Ref. 13]

In the July 2, 1998, response to RAI #2, Question #2, Palisades' Response was the following:

"Anomalous conditions were identified during walkdowns or reviews of calculations and were considered when component fragility was estimated or calculated. Each anomalous condition, outlier or low capacity component was accounted for explicitly in the SPRA, and none were identified as dominant seismic contributors. No plant improvements were identified as a result.

Certain relays were identified as outliers. All relays identified as outliers in the SPRA were also included in the USI A-46 Seismic Qualification Users Group (SQUG) program. These relays were dispositioned as SQUG outliers. All SPRA outlier relays have been dispositioned (replaced) per SQUG guidance as of June 1998. Therefore, no further plant improvements were identified for SPRA outliers.

Low capacity components were identified during walkdowns or reviews of calculations and were explicitly modeled in the SPRA with their appropriate low fragility parameters."

Since the only condition identified that had the potential to impact the SPRA revolved around the identified low ruggedness relays noted above, which were also identified as outliers under the USI A-46 Program, resolution of the A-46 outliers also resolved the IPEEE vulnerabilities.

The SER lists the Palisades-identified improvements that resulted from the IPEEE review. These were:

1. Including "operator actions that were credited in the IPEEE in the operator training program,"
2. Constructing "a seiche protection barrier... around the fuel oil transfer pumps,"
3. "Certain inadequate equipment anchorages and low-ruggedness relays will be dispositioned (i.e. replaced or additional analyses to demonstrate their seismic capabilities) under the USI A-46 program."

As a result of the submittal and subsequent NRC review, the only actions committed to were associated with the resolution of the USI A-46 (SQUG) Outliers.

In Palisades' letters to the NRC dated January 9, 2001 [Ref. 14], and June 26, 2003 [Ref. 15], it was reported to the NRC that the Outliers, as noted in the May 23, 1995, submittal for the resolution of Generic Letter 87-02 (USI A-46) [Ref. 16], had been resolved. This included the testing, further inspection, or replacement of the low-ruggedness relays noted in the RAI response above. Thus, there were no further actions required to resolve any other of the identified "anomalous conditions, outliers or low ruggedness components" in order to satisfy the IPEEE SER.

The seismic vulnerabilities (outlier relays) identified for Palisades Nuclear Plant during the USI A-46 (SQUG) program are reported in Attachment A and are inclusive of the IPEEE identified low-ruggedness relays. A total of 16 seismic relay vulnerabilities were identified by the Palisades Nuclear Plant SQUG program. For each seismic vulnerability identified, the table in Attachment A includes three pieces of information requested by Enclosure 3 of the 50.54(f) Letter:

- a description of the action taken to eliminate or reduce the seismic vulnerability
- whether the configuration management program has maintained the IPEEE action (including procedural changes) such that the vulnerability continues to be addressed
- when the resolution actions were completed

The list of relay vulnerabilities provided in Attachment A was used to ensure that some equipment enhanced as a result of the IPEEE/A-46 program were included in SWEL1 (see

Section 6.0). Documents describing these equipment enhancements and other modifications were available and provided to the SWEs during the NTTF 2.3 Seismic Walkdowns.

6.0 SEISMIC WALKDOWN EQUIPMENT LIST DEVELOPMENT

This section summarizes the process used to select the SSCs that were included in the Seismic Walkdown Equipment List (SWEL) in accordance with Section 3 of the Guidance. A team of equipment selection personnel with extensive knowledge of plant systems and components was selected to develop the SWEL. The SWEL is comprised of two groups of items:

- SWEL 1 consists of a sample of equipment required for safe shutdown of the reactor and to maintain containment integrity (i.e., supporting the five safety functions)
- SWEL 2 consists of items related to the spent fuel pool

The final SWEL is the combination of SWEL1 and SWEL2. The development of these two groups is described in the following sections.

The seismic walkdown equipment list (SWEL) and the method in which the equipment list was developed, including corresponding base lists, is provided under separate cover in EA-PSA-SEIS-SWEL-1-12-06 [Ref. 17], for SWEL 1, and EA-EC40453-01 [Ref. 18], for SWEL 2. The corresponding equipment lists are provided in Attachment B.

6.1 ITEMS SUPPORTING THE FIVE SAFETY FUNCTIONS

Safe shutdown of the reactor involves four safety functions:

- Reactor reactivity control (RRC)
- Reactor coolant pressure control (RCPC)
- Reactor coolant inventory control (RCIC)
- Decay heat removal (DHR)

Maintaining containment integrity is the fifth safety function:

- Containment function (CF)

The overall process for developing a sample of equipment to support these five safety functions is summarized in Figure 1-1 of the Guidance. Figure 1-1 of the Guidance provides a screening method for selecting SSCs, starting with all of the plant SSCs and reducing the number based on a series of screening criteria. The equipment coming out of Screen #3 and entering Screen #4 is defined as Base List 1. The equipment coming out of Screen #4 is the first Seismic Walkdown Equipment List, or SWEL 1. Refer to EA-PSA-SEIS-SWEL-1-12-06 for additional details.

6.2 SPENT FUEL POOL ITEMS

The overall process for developing a sample of SSCs associated with the spent fuel pool (SFP) is similar to that of the screening process for SWEL 1 and is summarized in Figure 1-2 of the Guidance. The equipment coming out of Screen #2 and entering Screen #3 is defined as Base List 2. The items coming out of Screen #4 are the items that could potentially cause the SFP to drain rapidly. The items coming out of either Screen #3 or Screen #4 are the second Seismic Walkdown Equipment List, or SWEL 2. Refer to EA-EC40453-01 for additional details and associated lists.

6.3 DEFERRED INACCESSIBLE ITEMS on SWEL

Each item on the SWEL shall be walked down as part of the NTTF 2.3 Seismic Walkdown program. In order to perform the seismic walkdowns of these items, it is necessary to have access to them and to be able to view their anchorage. In some cases, it was not feasible to gain access to the equipment or view its anchorage because Palisades Nuclear Plant was at power during the schedule when walkdowns were to be performed. For these cases, walkdowns of these items have been deferred until the next refueling outage, 1R23. Work orders have been created to ensure these inspections are included in the Outage scope. The updated report will be submitted within three months of the completion of 1R23, which is currently scheduled to start in October 2013.

Deferred items are summarized in the table below. The reason for deferral is identified as either ACC (indicating that the item is in an inaccessible area while the plant is at power) or CAB (indicating that the item requires opening cabinet/panel doors, which was not permitted by plant Operations personnel during the walkdown period, due to the equipment being energized and having the potential for creating a significant plant transient). A total of 8 items are deferred; of these, 3 are in inaccessible areas, and 5 are cabinets/panels required to be opened.

SWEL#	Equipment ID	Description	Location	Reason
SWEL1-027	CV-0861	CAC VHX-1 HI CAPACITY SW OUTLET	Cont., El. 590, Rm. 143	ACC
SWEL1-035	V-3A	CONTAINMENT COOLER RECIRCULATION FAN	Cont., El. 590, Rm. 143	ACC
SWEL1-040	VHX-1	CONTAINMENT AIR COOLER	Cont., El. 590, Rm., 143	ACC
SWEL1-044	ED-11A	125 VOLTS DC DISTRIBUTION PANEL	Aux., El. 590, Rm. 116A	CAB

SWEL#	Equipment ID	Description	Location	Reason
SWEL1-045	ED-21A	125 VOLTS DC DISTRIBUTION PANEL	Aux., El. 590, Rm. 116B	CAB
SWEL1-093	EJL-422	72-02 BREAKER BOX	Aux., El. 607, Rm. 225	CAB
SWEL1-094	EJL-423	72-01 BREAKER BOX	Aux., El. 607, Rm. 225A	CAB
SWEL1-095	42-1/RPS	CONTROL ROD CLUTCH BREAKER	Aux., El. 607, Rm. 224	CAB

Table 6-1

7.0 SEISMIC WALKDOWNS AND AREA WALK-BYS

The NTTF 2.3 Seismic Walkdown program conducted in accordance with the Guidance, involves two primary walkdown activities: Seismic Walkdowns and Area Walk-Bys. These activities were conducted at Palisades Nuclear Plant by two teams of two trained and qualified Seismic Walkdown Engineers (SWEs) (see Section 4.0). In some instances, these teams were supplemented by two additional SWEs. Each team included one engineer with at least several years of experience in seismic design and qualification of nuclear power plant SSCs. SWE teams were accompanied into the field by auxiliary operators, to open cabinets and answer questions. The teams were also accompanied by Palisades design engineers for all the walkdowns, often by a qualified SWE.

The seismic walkdowns and area walk-bys were conducted over the course of three weeks during October of 2012. Each morning, a pre-job brief with all personnel involved was conducted. This pre-job brief was used to outline the components and areas that would be walked down that day, to ensure consistency between the teams, to reinforce expectations, to identify potential personnel safety issues specific to that day, and to allow team members to ask questions and share lessons learned in the field. The SWE teams brought cameras, tape measures, flashlights, and mirrors into the field to assist with the seismic walkdowns and area walk-bys. The walkdowns and area walk-bys concluded each day with a post-job brief which discussed the observations and conditions identified in the field.

The potentially adverse seismic conditions identified by the Seismic Walkdowns and Area Walk-Bys are described in Attachment E. For each potentially adverse condition identified, Attachment E also describes how the condition has been addressed and its current status.

7.1 SEISMIC WALKDOWNS

Seismic walkdowns were performed in accordance with Section 4 of the Guidance for all items on the SWEL (SWEL 1 plus SWEL 2), except for those determined to be inaccessible and deferred (see Section 6.1). To document the results of the walkdown, a Seismic Walkdown Checklist (SWC) with the same content as that included in Appendix C of the Guidance was created for each walkdown item. Additionally, photographs were taken of each item and included on the corresponding SWC.

Prior to performance of the walkdowns, documentation packages were developed that contained the pre-filled SWC. The item description, floor elevation and location were documented on the SWC exactly as the item appears in Asset Suite, which is the document management system used by Palisades Nuclear Plant. The documentation packages also included other pertinent information including the location drawings, response spectra information, block wall maps, previous IPEEE/A-46 seismic walkdown documentation, and

anchorage drawings, where applicable. These documentation packages were brought with the SWE teams into the plant during the seismic walkdowns.

Walkdown inspections focused on anchorages and seismic spatial interactions, but also included inspections for other potentially adverse seismic conditions. Anchorage, in all cases, was specifically meant to be the attachment of the component to the structure. This included anchor bolts to concrete walls or floors, structural bolts to structural steel and welds to structural steel or embedded plates. For welds, the walkdown team looked for cracks and corrosion in the weld and base metal. Other bolts or connections, such as flange bolts on in-line components were not considered as equipment anchorage. These bolts and connections were evaluated by the SWEs and any potential adverse seismic concerns were documented under "other adverse seismic conditions" rather than under "anchorage". Thus, components with no attachments to the structure are considered as not having anchorage. Nevertheless, the attachment of these components to other equipment was evaluated and inspected for potentially adverse seismic conditions.

Cabinets/panels on the SWEL that could be reasonably opened without presenting safety or operational hazards were opened during the walkdown. This allowed visual observation of internal anchorage to the structure (where present), as well as inspection for "other adverse seismic conditions" related to internal components (if it could be observed without violating site electrical safety procedures). Where opening the cabinet/panel exhibited undue safety or operational hazards, it was considered inaccessible and the completion of the walkdown of that item was deferred to a later time (see Section 6.1). Where opening the cabinet/panel required extensive disassembly (e.g., doors or panels were secured by more than latches, thumbscrews, or similar), justification for how the inspection met the program goal without opening the cabinet/panel was included on the SWC and the walkdown of that item is considered complete (i.e. SWEL1-008).

In addition to the general inspection requirements, at least 50% of the SWEL items having anchorage required confirmation that the anchorage configuration was consistent with plant documentation. SWEL 1 originally contained 107 items and SWEL 2 contained 5 items. During the course of conducting the walkdowns, SWEL 1 was revised by eliminating 7 items, but adding 4 replacement items, for a total of 109 items. Of the 109 SWEL items, 102 were considered to have anchorage (i.e., removing in-line/line-mounted components). Of these 102 anchored components, the walkdowns of 51 included (or will include) anchorage configuration verification, which meets the 50% requirement. Where an anchorage configuration verification was conducted, the specific plant documentation used for comparison to the as-found conditions was referenced on the SWC.

The SWC for each SWEL item where a seismic walkdown has been initiated is included in Attachment C. A total of 109 SWCs are attached, 101 with completion status marked "Y", 3

with completion status marked "N", and 5 with completion status marked "U". SWCs considered and marked "U" are those where a walkdown was initiated, but whose completion was ultimately deferred because the cabinet/panel could not be opened during the walkdown period. Those SWCs marked "N" were deferred, with no walkdown initiated since the items are inaccessible in Containment. During the walkdowns, 7 items were removed from the SWEL. Of these items, 4 were found to be internal components of larger pieces of equipment on the SWEL and required entry into a Tech Spec Action Statement to inspect. Since these items would have fallen under the Rule-of-the-Box under the A-46 inspections, internal mounting checks were determined not to be required/practical. One item was mounted near the ceiling of a room and is not accessible without erecting scaffolding, which is not in accordance with the Guidance. The other two items are the 2400V Switchgear cabinets, which were determined to require disassembly to be able to inspect the anchorage inside the rear of the cubicle, adjacent to the bus-bars. These items are discussed in more detail in EA-PSA-SEIS-SWEL-1-12-06 [Ref. 17]. As such, the corresponding SWC for these components have not been included in Attachment C, however, the numbering system of the SWEL has remained unchanged. These SWCs are SWEL1-010, 011, 038, 039, 041, 084 and 085.

7.2 AREA WALK-BYS

Seismic area walk-bys were performed in accordance with Section 4 of the Guidance for all plant areas containing items on the SWEL (SWEL 1 plus SWEL 2), except for those SWEL items located in plant areas inaccessible during the walkdown period (see Section 6.1). For deferred items in cabinets, Area Walk-bys were completed since there were other SWEL items also located in these same areas. A separate Area Walk-By Checklist (AWC) with the same content as that included in Appendix C of the Guidance was used to document the results of each area walk-by performed.

A single area walk-by was conducted for plant areas containing more than one SWEL item. In cases where the room or area containing a component was very large, the extent of the area encompassed by the area walk-by was limited to a radius of approximately 35 feet around the subject equipment. The extent of the areas included in the area walk-bys is described on the AWC for that area. Because all areas contained more than one SWEL item, there were fewer total area walk-bys conducted than seismic walkdowns. A total of 22 area walk-bys will be necessary to cover all plant areas containing at least one accessible SWEL item, including the deferred items inside Containment.

The AWC for each area walk-by completed is included in Attachment D. A total of 20 AWCs are attached, which represent all of the areas containing a SWEL item that were accessible during the walkdown period. An estimated 2 additional area walk-bys of the areas inside Containment will be required to be completed for those inaccessible items (see Section 6.1).

During the walkdowns, certain items were not accessible for detailed inspection during any operational mode of the plant and subsequently were removed from the SWEL. These items, were however, still covered by Area walk-bys provided in Attachment D. These AWCs are AWC-01, 03, 06, 16 and 18.

8.0 IDENTIFIED POTENTIALLY ADVERSE SEISMIC CONDITIONS

During the course of the seismic walkdowns and area walk-bys, the objective of the SWE teams was to identify existing degraded, non-conforming, or unanalyzed plant conditions with respect to its current seismic licensing basis. This section summarizes the process used to handle conditions identified, what conditions were found, and how they were treated for eventual resolution.

8.1 CONDITON IDENTIFICATION

When an unusual condition was observed by a SWE team in the field, the condition was noted on the SWC or AWC form and briefly discussed between the two SWEs to agree upon whether it was a potentially adverse seismic condition. These initial conclusions were based on conservative engineering judgment and the training required for SWE qualification.

For conditions that were reasonably judged as insignificant to seismic response, the disposition was included on the SWC or AWC checklist and the appropriate question was marked "Y", indicating that no associated potentially adverse seismic condition was observed. Other unusual or uncertain conditions noted during the Walkdowns and Walk-bys were reported to site personnel for further resolution through the Corrective Action Program (CAP) (see Section 8.2.2), and documented accordingly within the SWC with the corresponding Condition Report (CR) number.

For conditions that were judged as potentially significant to seismic response, then the condition was photographed and the appropriate question on the SWC or AWC was marked "N" indicating that a potentially adverse seismic condition was observed. The condition was then immediately reported to site personnel for further resolution (see Section 8.2) and was documented for reporting in Attachment E. A total of 22 potentially adverse seismic conditions were identified. These conditions were generally related to seismic housekeeping, non-conforming anchorage, drawing configuration or spatial interaction.

8.2 CONDITION RESOLUTION

Conditions observed during the seismic walkdowns and area walk-bys determined to be potentially adverse seismic conditions are summarized in Attachment E, including how each condition has been addressed and its current status. Each potentially adverse seismic condition is addressed with a Licensing Basis Evaluation (LBE) to determine whether it requires entry into the CAP. The Licensing Basis Evaluations are presented in Attachment F. The decision to conduct a LBE or enter the condition directly into the CAP was made on a case-by-case basis. Issues easily dispositioned using basic engineering principles and

engineering judgment were dispositioned directly in the LBEs, whereas more complex issues and issues requiring tracking for resolution were entered into the CAP.

Unusual conditions that were not seismically significant were entered into the CAP directly as described previously. Further resolution of these conditions is not tracked or reported as part of the NTTF 2.3 Seismic Walkdown program, except by noting the CR numbers generated on the applicable SWCs and AWCs.

8.2.1 Licensing Basis Evaluation

Potentially adverse seismic conditions identified as part of the NTTF 2.3 Seismic Walkdown program may be evaluated by comparison to the current licensing basis of the plant as it relates to the seismic adequacy of the equipment in question, as is described in Section 5 of the Guidance. If the identified condition is consistent with existing seismic documentation associated with that item, then no further action is required. If the identified condition cannot easily be shown to be consistent with existing seismic documentation, or no seismic documentation exists, then the condition is entered into the CAP.

For all 22 identified potentially adverse seismic conditions, 22 LBEs were performed. Each LBE performed is documented consistently, and included in Attachment F. The results of these LBEs with respect to the associated potentially adverse seismic conditions are summarized in Attachment E.

The following Licensing Basis Evaluations provided below are worth noting. Refer to specific LBEs provided in Attachment F for more information on the condition.

LB-17

Condition: PT-0762C is missing a nut for one of its four bolts that connects the Rosemount transmitter to its bracket. The bolt with the missing nut is the one closest to the floor mounted tube support.

Evaluation: Per CR-PLP-2012-06644 the as found configuration is acceptable. The capacity of the three remaining bolts greatly exceeds the seismic demand of the transmitter. WO326722 task 4 has been planned to install the missing nut.

LB-20

Condition: An unidentified 2" pipe in the overhead of the 1-D Switchgear room has an approximate unsupported span of 18'. The piping is located along the north end of EB-22. A 1/2" conduit for the fire protection system is also supported off this 2" line.

Evaluation: CR-PLP-2012-06742 was initiated to identify this issue. This piping ties into the plant storm drainage system. Both the 2" pipe and 1/2" conduit are not safety related and were not required to be seismically designed. The span length for the pipe exceeds a typical span for 2" piping. However, there are large margins in the capacity of these spans as compared to a calculated allowable stress. It is judged that in a seismic event, this piping would maintain its structural integrity based on the overall configuration of the piping and supports in the room, and the low loads on the system.

8.2.2 Corrective Action Program Entries

Conditions identified during the seismic walkdowns and area walk-bys that required further resolution were entered into the plant's CAP. These were reviewed in accordance with the plant's existing processes and procedures. Conditions entered into the CAP typically included three types of unusual conditions:

- Seismically insignificant unusual conditions
- Potentially adverse seismic condition that does not pass a LBE
- Potentially adverse seismic condition that bypasses a LBE

The CR numbers, current status, and resolution (where applicable and available) are summarized for these potentially adverse seismic conditions in Attachment E.

8.2.3 Plant Changes

The CAP entries (CRs) generated by the NTTF 2.3 Seismic Walkdown program are being resolved in accordance with the plant CAP process, including operability evaluations, extent of condition evaluations, and root cause analysis (where applicable). Initial evaluations indicate that no immediate plant changes are necessary. Final and complete resolutions of the CRs for seismically insignificant unusual conditions and potentially adverse seismic conditions will determine if future modifications to the plant are required. While no immediate plant modifications have been identified as a result of the seismic walkdowns and walk-bys, various cases were

found where repairs are required or housekeeping issues are being addressed. Current status and resolutions (where applicable and available) for CRs related to potentially adverse seismic conditions are provided in Attachment E.

9.0 PEER REVIEW

The peer review for the NTTF Recommendation 2.3: Seismic Walkdowns was performed in accordance with Section 6 of the Guidance. The peer review included an evaluation of the following activities:

- review of the selection of the structures, systems, and components, (SSCs) that are included in the Seismic Walkdown Equipment List (SWEL);
- review of a sample of the checklists prepared for the Seismic Walkdowns and Area Walk-bys;
- review of Licensing Basis Evaluations and decisions for entering the potentially adverse conditions into the Plant's Corrective Action Program (CAP); and
- review of the final submittal report.

At least two members of the peer review team (see Section 4.5) were involved in the peer review of each activity, the team member with the most relevant knowledge and experience taking the lead for that particular activity. A designated overall Peer Review Team Leader provided oversight related to the process and technical aspects of the peer review, paying special attention to the interface between peer review activities involving different members of the peer review team.

9.1 PEER REVIEW OF SEISMIC WALKDOWN EQUIPMENT LIST DEVELOPMENT

Peer review of the selection of SSCs for SWEL development was conducted by a peer reviewer who has knowledge and experience related to nuclear reactor safety analyses and PWR plant systems. The DRAFT version of EA-PSA-SEIS-SWEL-1-12-06 [Ref. 17], which provided the basis for SWEL-1 development, was reviewed and compared against the IPEEE and A-46 Equipment List, the ModTrack database, and the systems listed in Appendix E of the Guidance. The important components and systems that perform safety functions as outlined in Chapter 14 of Palisades' FSAR were also reviewed. The peer reviewer's focus was on systems that perform reactor reactivity control functions, reactor coolant pressure control functions, reactor coolant inventory control functions, decay heat removal functions, and Containment functions.

A list of alternate components that serve or support these safety functions, including charging pumps, a HPSI pump, boric acid tanks, the diesel oil storage tank, were recommended to the Equipment Selection Team at Palisades. These components were primarily taken from the A-46 equipment list, while checking against other databases provided in a DRAFT version of EA-PSA-SEIS-SWEL-1-12-06. The proposed additions/changes to the SWEL 1 were sent to the Equipment Selection Team at Palisades. The team reviewed and considered these

suggested changes, and their responses to the Peer Review comments are attached but ultimately left the SWEL 1 as originally proposed, since all 5 safety functions were adequately represented.

Both editorial and technical comments on DRAFT EA-PSA-SEIS-SWEL-1-12-06 were provided to the Equipment Selection Team at Palisades. These comments were incorporated, as appropriate in the EA. The logic used within the development of this engineering analysis, coupled with the knowledge of the Equipment Selection Team, was used to limit the number of items to be included in Table 9.4.1. The Peer Reviewer agreed that the selected equipment adequately represented the noted safety functions and met the intent of the Guidance, including representation from the Equipment Classes.

The peer reviewer agreed with the Equipment Selection Team's SWEL 2. The spent fuel pool related items selected for SWEL 2 were consistent with the guidance given in Section 3 of the Guidance as describe in EA-EC40453-01 [Ref. 18]. Palisades does not have SFP penetrations below 10 feet above the top of the fuel assemblies. Since there are no such penetrations, no rapid drain-down items were included in SWEL 2. The peer review checklist of the SWEL is provided in Attachment G.

9.2 PEER REVIEW OF SEISMIC WALKDOWNS AND WALK-BYS

Peer review of the seismic walkdowns and area walk-bys was conducted by two peer reviewers, Mr. Timothy Crocker and Mr. Al Lyon. Mr. Crocker is a qualified SWE and Mr. Lyon is certified per the Seismic Qualification Utility Group (SQUG) and has an extensive knowledge of seismic engineering as it applies to nuclear power plants. The peer reviewers accompanied the SWEs on the majority of walkdowns and the peer reviews were conducted concurrent with the walkdowns. The peer review was performed as follows:

- The peer review team reviewed the walkdown packages (including checklists, photos, drawings, etc.) for SWEL items already completed to ensure that the checklists were completed in accordance with the Guidance. A total of 44 SWC and 7 AWC forms were reviewed, each representing over 25% of their respective totals. In the context of the Guidance, the peer review team considered the number of walkdown packages reviewed to be appropriate. The packages reviewed represent a variety of equipment types in various plant areas. Specific SWC forms reviewed are provided in the following table:

PEER REVIEWED CHECKLISTS		
SWEL1-001	SWEL1-058	SWEL2-001
SWEL1-003	SWEL1-061	SWEL2-002
SWEL1-010	SWEL1-062	SWEL2-003
SWEL1-015	SWEL1-063	SWEL2-004
SWEL1-017	SWEL1-064	SWEL2-005
SWEL1-018	SWEL1-067	AWC-01
SWEL1-021	SWEL1-068	AWC-05
SWEL1-025	SWEL1-069	AWC-06
SWEL1-026	SWEL1-072	AWC-07
SWEL1-028	SWEL1-073	AWC-08
SWEL1-029	SWEL1-077	AWC-15
SWEL1-032	SWEL1-078	AWC-21
SWEL1-041	SWEL1-079	
SWEL1-045	SWEL1-086	
SWEL1-046	SWEL1-089	
SWEL1-047	SWEL1-098	
SWEL1-048	SWEL1-099	
SWEL1-053	SWEL1-103	
SWEL1-055	SWEL1-110	
SWEL1-057		

Table 9-1

- While reviewing the walkdown packages, the peer reviewers conducted informal interviews of the SWEs and asked clarifying questions to verify that they were conducting walkdowns and area walk-bys in accordance with the Guidance.
- The peer review team held a meeting with the SWE teams to provide feedback on the walkdown and walk-by packages reviewed and the informal interviews, and discuss potential modifications to the documentation packages in the context of the Guidance.
- The peer review team held a meeting with the SWE teams to provide feedback on the walkdown and walk-by observations, and discuss how lessons learned from review of the walkdown packages had been incorporated into the walkdown process.

As a result of the peer review activities, the SWE teams modified their documentation process to include additional clarifying details, particularly related to checklist questions marked "N/A" and where conditions were observed but judged as insignificant. The peer

review team felt these modifications would be of benefit for future reviews of checklists incorporated into the final report. These modifications were recommended following review of the walkdown and area walk-by packages, and the observation walkdowns and area walk-bys demonstrated that the SWEs understood the recommendations and were incorporating them into the walkdown and area walk-by process. Previously completed checklists were revised to reflect lessons learned from the peer review process.

Based on completion of the walkdown and walk-by peer review activities described, the peer review team concludes that the SWE teams are familiar with and followed the process for conducting seismic walkdowns and area walk-bys in accordance with the Guidance. The SWE teams adequately demonstrated their ability to identify potentially adverse seismic conditions such as adverse anchorage, adverse spatial interaction, and other adverse conditions related to anchorage, and perform anchorage configuration verifications, where applicable. The SWEs also demonstrated the ability to identify seismically-induced flooding interactions and seismically-induced fire interactions such as the examples described in Section 4 of the Guidance. The SWEs demonstrated appropriate use of self-checks and peer checks. They discussed their observations with a questioning attitude, and documented the results of the seismic walkdowns and area walk-bys on appropriate checklists.

9.3 PEER REVIEW OF LICENSING BASIS EVALUATIONS

A peer review was completed of the licensing basis evaluations provided in Attachment F and the corresponding summary sheet provided in Attachment G. The majority of the licensing basis evaluations provided immediate resolution to operability concerns of the potentially adverse conditions identified by the walkdown personnel. Within these licensing basis evaluations, CRs were generated for maintenance issues to replace missing bolts, nuts or remove items for housekeeping issues, or to provide further, detailed resolution of the potentially adverse seismic condition. The remaining licensing basis evaluations were created to document potentially adverse seismic conditions that were immediately entered into the CAP for detailed evaluation and investigation. The peer review of these LBEs ensured that all the information provided from the walkdown team to the licensing basis evaluation team member provided enough detail for accurate and timely resolution.

9.4 PEER REVIEW OF SUBMITTAL REPORT

The peer review team was provided with an early draft of this submittal report for peer review. The peer review team verified that the submittal report met the objectives and requirements of Enclosure 3 to the 50.54(f) Letter, and documented the NTTF 2.3 Seismic Walkdown program performed in accordance with the Guidance. The peer review team provided the results of review activities to the SWE team for consideration. The SWE team satisfactorily addressed all peer review comments in the final version of the submittal report. The signature

of the Peer Review Team Leader provides documentation that all elements of the peer review as described in Section 6 of the Guidance were completed.

10.0 REFERENCES

1. 10CFR50.54(f) Letter, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3 and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident, dated March 12, 2012
2. EPRI 1025286, Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic, June 2012
3. Palisades Nuclear Plant Updated Final Safety Analysis Report (FSAR), Revision 30
4. Generic Letter No. 88-20, Supplement 4, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities
5. Palisades Nuclear Plant Individual Plant Examination of External Events (IPEEE) Submittal Report, June 30, 1995, Revision 0
6. Generic Letter No. 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46
7. Seismic Qualification Utility Group (SQUG) Procedure: Generic Implementation Procedure (GIP) for Seismic Verification of Nuclear Power Plant Equipment, Revision 3A, December 2001
8. Palisades Nuclear Plant Individual Plant Examination of External Events (IPEEE) Submittal Report, May 31, 1996, Revision 1
9. Staff Evaluation Report by the Office of Nuclear Reactor Regulation Related to the Individual Plant Examination of External Events Consumers Energy Company Palisades Plant, Docket No. 50-255, November 29, 1999
10. Generic Letter No. 88-20, Supplement 4, Individual Plant Examination of External Events – Request for Additional Information, June 14, 1996
11. Generic Letter No. 88-20, Supplement 4, Individual Plant Examination of External Events – Request for Additional Information, March 4, 1998
12. Letter, Thomas Bordine to NRC Document Control Desk, Generic Letter No. 88-20, Supplement 4, Individual Plant Examination of External Events – Response to Request for Additional Information, September 30, 1996
13. Letter, Nathan Haskell to NRC Document Control Desk, Generic Letter No. 88-20, Supplement 4, Individual Plant Examination of External Events – Response to Request for Additional Information (TAC NO. M83653), July 2, 1998
14. Letter, Nathan Haskell to NRC Document Control Desk, SQUG Outlier Resolution – Revision of Commitment, January 9, 2001

15. Letter, Douglas Cooper to NRC Document Control Desk, Final Closeout of Unresolved Safety Issue A-46 Outliers, June 26, 2003

16. Submittal for Resolution of Generic Letter No. 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46, May 23, 1995

17. EA-PSA-SEIS-SWEL-1-12-06, Seismic Walkdown Equipment List (SWEL 1), Rev. 0

18. EA-EC40453-01, Fukushima Seismic Walkdowns – Seismic Walkdown Equipment List (SWEL) 2 – Spent Fuel Pool Equipment and Rapid Drain-Down Equipment, Rev. 0

19. EN-DC-168, Fukushima Near-Term Task Force Recommendation 2.3 Seismic Walkdown Procedure, Rev. 0

11.0 ATTACHMENTS

ATTACHMENT A – IPEEE VULNERABILTIES TABLE

ATTACHMENT B – SEISMIC WALKDOWN EQUIPMENT LISTS

ATTACHMENT C – SEISMIC WALKDOWN CHECKLISTS (SWCs)

ATTACHMENT D – AREA WALK-BY CHECKLISTS (AWCs)

ATTACHMENT E – POTENTIALLY ADVERSE SEISMIC CONDITIONS

ATTACHMENT F – LICENSING BASIS EVALUATION FORMS

ATTACHMENT G – PEER REVIEW CHECKLIST FOR SWEL

ATTACHMENT H – SEISMIC WALKDOWN ENGINEER TRAINING CERTIFICATES

ATTACHMENT J – PEER REVIEW COMMENT FORM

ATTACHMENT 9.3 — IPEEE VULNERABILITIES TABLE
Sheet 1 of 2

#	IPEEE VULNERABILITY	COMMITMENT	RESOLUTION	CMP	RESOLVED
V-01	ID# 127D-1, WESTINGHOUSE TYPE SV, STY 1876094 Vulnerability: Low Ruggedness	Replace	Replaced under FES-97-096	Y	See Note 1
V-02	ID# 127D-2, WESTINGHOUSE TYPE SV, STY 1876094 Vulnerability: Low Ruggedness	Replace	Replaced under FES-97-097	Y	See Note 1
V-03	ID# G1-1/DR, SQUARE D P04 TYPE, CLASS 7001 Vulnerability: No Test Data	Replace	Replaced under FES-97-118	Y	See Note 1
V-04	ID# G1-2/DR, SQUARE D P04 TYPE, CLASS 7001 Vulnerability: No Test Data	Replace	Replaced under FES-97-117	Y	See Note 1
V-05	ID# G1-1/K1, WESTINGHOUSE MD-101 Vulnerability: No Test Data	Test	Tested at Wyle, PO C0024161, Test Report # 46978	Y	See Note 1
V-06	ID# G1-1/K1A, WESTINGHOUSE MD-101 Vulnerability: No Test Data	Test	Tested at Wyle, PO C0024161, Test Report # 46978	Y	See Note 1
V-07	ID# G1-2/K1, WESTINGHOUSE MD-101 Vulnerability: No Test Data	Test	Tested at Wyle, PO C0024161, Test Report # 46978	Y	See Note 1
V-08	ID# G1-2/K1A, WESTINGHOUSE MD-101 Vulnerability: No Test Data	Test	Tested at Wyle, PO C0024161, Test Report # 46978	Y	See Note 1
V-09	ID# G1-1/K2, WESTINGHOUSE MD-101 Vulnerability: No Test Data	Test	Tested at Wyle, PO C0024161, Test Report # 46326-1	Y	See Note 1
V-10	ID# G1-2/K2, WESTINGHOUSE MD-101 Vulnerability: No Test Data	Test	Tested at Wyle, PO C0024161, Test Report # 46326-1	Y	See Note 1

ATTACHMENT 9.3
Sheet 2 of 2

IPEEE VULNERABILITIES TABLE

#	IPEEE VULNERABILITY	COMMITMENT	RESOLUTION	CMP	RESOLVED
V-11	ID# 194-108, CLARK/ALLIS CHALMERS Vulnerability: No Data	Replace	Replaced under FES-97-092	Y	See Note 1
V-12	ID# 194-211, CLARK/ A C 14-237-012-511 Vulnerability: No Data	Replace	Replaced under FES-97-093	Y	See Note 1
V-13	ID# 187D-107/XYZ, GE IJD52A Vulnerability: Not Marked "High G"	Re-inspect for "High G"	Determined to be "High G" relays, evaluated under USI-A46	Y	See Note 1
V-14	ID# 187D-213/XYZ, GE IJD52A Vulnerability: Not Marked "High G"	Re-inspect for "High G"	Determined to be "High G" relays, evaluated under USI-A46	Y	See Note 1
V-15	ID# 162-107X, WESTINGHOUSE SG Vulnerability: Low Ruggedness	Replace	Replaced under FES-97-094	Y	See Note 1
V-16	ID# 162-213X, WESTINGHOUSE SG Vulnerability: Low Ruggedness	Replace	Replaced under FES-97-095	Y	See Note 1

Prepared by: Al Lyon Date: 11/6/2012

Notes:

1. All outliers were resolved as of May 23, 1995, as identified in the Palisades' letters to the NRC dated January 9, 2001 and June 26, 2003.

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(14)	(14)	(14)	(14)
1	1	**EB-07**	EB-07	**480 VOLT MCC NO. 7**	Y	Y	Y		Y	I			x				
1	1	**EB-21**	EB-21	**480 VOLT MOTOR CONTROL CENTER #21**	Y	Y	Y	Y	Y	I					x		
1	1	**EB-22**	EB-22	**480 VOLT MOTOR CONTROL CENTER #22**	Y	Y	Y		Y	I					x	x	
1	1	**EB-23**	EB-23	**480 VOLT MOTOR CONTROL CENTER #23**	Y	Y	Y		Y	I					x	x	
1	1	**EB-24**	EB-24	**480 VOLT MOTOR CONTROL CENTER #24**	Y	Y	Y		Y	I			x	x	x	x	
1	2	**EB-11**	EB-11	**480 VOLT LOAD CENTER BUS NO. 11**	Y	Y	Y		Y	I			x		x	x	
1	2	**EB-12**	EB-12	**480 VOLT LOAD CENTER BUS NO. 12**	Y	Y	Y		Y	I			x		x	x	
1	2	**EB-19**	EB-19	**480 VOLT LOAD CONTROL CENTER NO. 19**	Y	Y	Y		Y	I			x	x	x	x	
1	2	**EB-20**	EB-20	**480 VOLT LOAD CONTROL CENTER NO. 20**	Y	Y	Y		Y	I			x	x	x	x	
1	3	EA-11	EA-11	BUS 1C (2400 VOLT)	Y	Y	Y		Y	I			x	x	x	x	
1	3	EA-12	EA-12	BUS 1D (2400 VOLT)	Y	Y	Y	Y	Y	I			x	x	x	x	
1	4	**EX-11**	EX-11	**STATION POWER TRANSFORMER NO. 11**	Y	Y	Y		Y	I			x				

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
1	4	EX-12	EX-12	STATION POWER TRANSFORMER NO. 12	Y	Y	Y		Y	I			x				
1	4	EX-19	EX-19	STATION POWER TRANSFORMER #19	Y	Y	Y		Y	I			x	x	x	x	
1	4	EX-20	EX-20	STATION POWER TRANSFORMER #20	Y	Y	Y		Y	I			x	x	x	x	
1	5	P-52B	P-52B	COMPONENT COOLING WATER PUMP	Y	Y	Y	Y	Y	I					x	x	
1	5	P-54C	P-54C	CONTAINMENT SPRAY PUMP	Y	Y	Y		Y	I		x					x
1	5	P-67B	P-67B	LOW PRESSURE SAFETY INJECTION PUMP	Y	Y	Y		Y	I		x			x	x	
1	5	P-8A	P-8A	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP	Y	Y	Y		Y	I						x	
1	5	P-8B	P-8B	STEAM DRIVEN AUXILIARY FEEDWATER PUMP	Y	Y	Y	Y	Y	I						x	
1	5	P-8C	P-8C	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP	Y	Y	Y	Y	Y	I						x	
1	6	P-7A	P-7A	SERVICE WATER PUMP	Y	Y	Y	Y	Y	I	H					x	
1	6	P-7B	P-7B	SERVICE WATER PUMP	Y	Y	Y	Y	Y	I	H					x	
1	6	P-7C	P-7C	SERVICE WATER PUMP	Y	Y	Y	Y	Y	I	H					x	

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
1	7	CV-0736A	CV-0736A	P-8C FLOW CONTROL TO E-50B	Y	Y	Y		Y	I						x	
1	7	CV-0737A	CV-0737A	P-8C FLOW CONTROL TO E-50A	Y	Y	Y		Y	I						x	
1	7	CV-0861	CV-0861	CAC VHX-1 HI CAPACITY SW OUTLET	Y	Y	Y	Y	Y	I							x
1	7	CV-1359	CV-1359	NON-CRITICAL SW HEADER ISOLATION	Y	Y	Y	Y	Y	I			H	x	x	x	
1	8	MO-3189	MO-3189	LPSI PUMP P-67B SUCTION FROM SIRWT	Y	Y	Y		Y	I		x			x		
1	8	SV-1359	SV-1359	NONCRITICAL SERVICE WATER SHUTOFF	Y	Y	Y	Y	Y	I			H			x	
1	8	SV-1470	SV-1470	EDG 1-1 FUEL OIL RESVR INLET FROM DAY TANK	Y	Y	Y		N	I	T, H		x	x	x	x	
1	8	SV-1471	SV-1471	EDG 1-2 FUEL OIL RESVR INLET FROM DAY TANK	Y	Y	Y		N	I	T, H		x	x	x	x	
1	9	V-24A	V-24A	K-6A DIESEL GENERATOR ROOM VENT FAN	Y	Y	Y	Y	Y	I	T, H		x	x	x	x	
1	9	V-24C	V-24C	K-6B DIESEL GENERATOR ROOM VENT FAN	Y	Y	Y	Y	Y	I	T, H		x	x	x	x	
1	9	V-3A	V-3A	CONTAINMENT COOLER RECIRCULATION FAN	Y	Y	Y	Y	Y	I							x

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
1	9	**V-95**	V-95	**CONTROL ROOM VENTILATION MAIN SUPPLY FAN**	Y	Y	N		N	I							
1	9	**V-96**	V-96	**CONTROL ROOM VENTILATION MAIN SUPPLY FAN**	Y	Y	N		N	I							
1	10	VDX-95	VDX-95	V-95 COOLING COIL	Y	N	Y		N	I							
1	10	VDX-96	VDX-96	V-96 COOLING COIL	Y	N	Y		N	I							
1	10	**VHX-1**	VHX-1	**CONTAINMENT AIR COOLER**	Y	Y	Y	Y	Y	I							x
1	10	**VHX-27B**	VHX-27B	**ESR COOLING COIL**	Y	Y	Y		Y	I						x	
1	11	**VC-10**	VC-10	**CONTROL ROOM HVAC REFRIG CONDENSING UNIT**	Y	Y	N		N	I							
1	11	**VC-11**	VC-11	**CONTROL ROOM HVAC REFRIG CONDENSING UNIT**	Y	Y	N		N	I							
1	14	**ED-11A**	ED-11A	**125 VOLTS DC DISTRIBUTION PANEL**	Y	Y	Y		Y	I			x	x	x	x	
1	14	**ED-21A**	ED-21A	**125 VOLTS DC DISTRIBUTION PANEL**	Y	Y	Y		Y	I			x	x	x	x	
1	14	**EY-10**	EY-10	**PREFERRED AC BUS NO. 1 INVERTER**	Y	Y	Y	Y	Y	I			x	x	x	x	
1	14	**EY-20**	EY-20	**PREFERRED AC BUS NO. 2 INVERTER**	Y	Y	Y	Y	Y	I			x	x	x	x	
1	14	**EY-30**	EY-30	**PREFERRED AC BUS NO. 3 INVERTER**	Y	Y	Y	Y	Y	I			x	x	x	x	

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
1	14	EY-40	EY-40	PREFERRED AC BUS NO. 4 INVERTER	Y	Y	Y	Y	Y	I			x	x	x	x	
1	15	ED-01	ED-01	MAIN STATION BATTERY LEFT CHANNEL	Y	Y	Y	Y	Y	I			x	x	x	x	
1	15	ED-02	ED-02	MAIN STATION BATTERY RIGHT CHANNEL	Y	Y	Y	Y	Y	I			x	x	x	x	
1	16	ED-06	ED-06	INVERTER NO. 1	Y	Y	Y	Y	Y	I			x	x	x	x	
1	16	ED-07	ED-07	INVERTER NO. 2	Y	Y	Y	Y	Y	I			x	x	x	x	
1	16	ED-08	ED-08	INVERTER NO. 3	Y	Y	Y	Y	Y	I			x	x	x	x	
1	16	ED-09	ED-09	INVERTER NO. 4	Y	Y	Y	Y	Y	I			x	x	x	x	
1	16	ED-15	ED-15	BATTERY CHARGER NO. 1	Y	Y	Y	Y	Y	I			x	x	x	x	
1	16	ED-16	ED-16	BATTERY CHARGER NO. 2	Y	Y	Y	Y	Y	I			x	x	x	x	
1	16	ED-17	ED-17	BATTERY CHARGER NO. 3	Y	Y	Y	Y	Y	I			x	x	x	x	
1	16	ED-18	ED-18	BATTERY CHARGER NO. 4	Y	Y	Y	Y	Y	I			x	x	x	x	
1	17	K-6A	K-6A	EMERGENCY DIESEL GENERATOR 1-1	Y	Y	Y	Y	Y	I	T, H		x	x	x	x	
1	17	K-6B	K-6B	EMERGENCY DIESEL GENERATOR 1-2	Y	Y	Y		Y	I	T, H		x	x	x	x	
1	18	FT-0727	FT-0727	AUX FEEDWATER PPS P-8A & P-8B FLOW TRANS	Y	Y	Y		Y	I						x	

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
1	18	**FT-0736A**	FT-0736A	**AUX FW PUMP P-8C TO STM GEN E-50B FLOW IND**	Y	Y	Y	Y	Y	I						x	
1	18	**FT-0737A**	FT-0737A	**AUX FW PUMP P-8C TO STM GEN E-50A FLOW**	Y	Y	Y		Y	I						x	
1	18	**FT-0749**	FT-0749	**AUX FEEDWATER PPS P-8A & P-8B FLOW TRANS**	Y	Y	Y		Y	I						x	
1	18	**I/P-0727**	I/P-0727	**AUX FEEDWATER FLOW CONTROL TO S/G E-50B**	Y	Y	Y		Y	I						x	
1	18	**I/P-0736A**	I/P-0736A	**AFW FLOW CNTRL TO S/G E-50B**	Y	Y	Y		Y	I						x	
1	18	**I/P-0737A**	I/P-0737A	**AFW FLOW CONTROL TO S/G E-50A**	Y	Y	Y	Y	Y	I						x	
1	18	**I/P-0749**	I/P-0749	**AUX FEEDWATER FLOW CONTROL TO S/G E-50A**	Y	Y	Y		Y	I						x	
1	18	**LT-0331**	LT-0331	**SIRW TANK CKT 2 LEVEL TRANSMITTER**	Y	Y	Y		N	O		x			x		
1	18	**LT-0332A**	LT-0332A	**SIRW LEVEL TRANSMITTER**	Y	Y	Y		N	O		x			x		
1	18	**LT-2021**	LT-2021	**CONDENSATE STORAGE TANK T-2 HIGH-LOW LEVEL**	Y	Y	Y		N	O						x	
1	18	**LT-2022**	LT-2022	**CONDENSATE STORAGE TANK HI-LO LEVEL TRANS**	Y	Y	Y		N	O						x	

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
1	18	PT-0741A	PT-0741A	AUX FW PUMPS P-8A AND P-8B LOW SUCTION	Y	Y	Y		Y	I						x	
1	18	PT-0741B	PT-0741B	AUX FW PUMPS P-8A AND P-8B LOW SUCTION	Y	Y	Y		Y	I						x	
1	18	PT-0741DD	PT-0741DD	AUX FW PUMPS P-8A AND P-8B LOW SUCTION	Y	Y	Y		Y	I						x	
1	18	PT-0762A	PT-0762A	AUX FW PUMP P-8C LOW SUCTION PRESSURE TRIP	Y	Y	Y		Y	I						x	
1	18	PT-0762B	PT-0762B	AUX FW PUMP P-8C LOW SUCTION PRESSURE TRIP	Y	Y	Y		Y	I						x	
1	18	PT-0762C	PT-0762C	AUX FW PUMP P-8C LOW SUCTION PRESSURE TRIP	Y	Y	Y		Y	I						x	
1	18	TS-1820	TS-1820	EDG RM VENT FAN V-24D AUTOMATIC TEMP SW	Y	Y	Y		Y	I	T, H		x	x	x	x	
1	18	TS-1822	TS-1822	EDG RM VENT FAN V-24C AUTOMATIC TEMP SW	Y	Y	Y		Y	I	T, H		x	x	x	x	
1	18	TS-1828	TS-1828	EDG RM VENT FAN V-24A AUTOMATIC TEMP SW	Y	Y	Y		Y	I	T, H		x	x	x	x	
1	18	TS-1844	TS-1844	EDG RM VENT FAN V-24B AUTOMATIC TEMP SW	Y	Y	Y		Y	I	T, H		x	x	x	x	

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
1	19	TE-1733	TE-1733	AFU VF-26A 2ND CHARCOAL FILTER DOWNSTREAM	Y	Y	N		N	I							
1	19	TE-1734	TE-1734	AFU VF-26B 2ND CHARCOAL FILTER DOWNSTREAM	Y	Y	N		N	I							
1	20	**EC-187**	EC-187	**AUX FEEDWATER CONTROL ACTUATION CABINENT**	Y	Y	Y		N	I						x	
1	20	**EJ-1005**	EJ-1005	**AUX FEEDWATER RELAY CONTROL**	Y	Y	Y		N	I						x	
1	20	**EJ-1006**	EJ-1006	**AUX. FEEDWATER RELAY CONTROL**	Y	Y	Y		N	I						x	
1	20	**EJ-1051**	EJ-1051	**AUX FEEDWATER CONTROLS**	Y	Y	Y		N	I						x	
1	20	**EJ-1052**	EJ-1052	**AUX. FEEDWATER RELAY CONTROLS**	Y	Y	Y		N	I						x	
1	20	**EJ-9400**	EJ-9400	**BUS 1-C UNDER VOLTAGE RELAYS**	Y	Y	Y	Y	N	I			x	x	x	x	
1	20	**EJ-9401**	EJ-9401	**BUS 1-D UNDERVOLTAGE RELAYS**	Y	Y	Y	Y	N	I			x	x	x	x	
1	20	**EJL-422**	EJL-422	**72-02 BREAKER BOX**	Y	Y	Y	Y	N	I			x	x	x	x	
1	20	**EJL-423**	EJL-423	**72-01 BREAKER BOX**	Y	Y	Y	Y	N	I			x	x	x	x	
1	20	**42-1/RPS**	42-1/RPS	**Control Rod Clutch Breaker**	Y	Y	Y		Y	I			x				
1	21	**E-54A**	E-54A	**COMPONENT COOLING WATER HEAT EXCHANGER**	Y	Y	Y	Y	Y	I				x	x	x	

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
1	21	E-54B	E-54B	COMPONENT COOLING HEAT EXCHANGER	Y	Y	Y		Y	I				x	x	x	
1	21	E-60A	E-60A	SHUTDOWN COOLING HEAT EXCHANGER	Y	Y	Y	Y	Y	I		x				x	
1	21	E-60B	E-60B	SHUTDOWN COOLING HEAT EXCHANGER	Y	Y	Y	Y	Y	I		x				x	
1	21	T-13A	T-13A	EDG K-6A JACKET WATER SURGE TANK	Y	Y	Y	Y	N	I	T, H		x	x	x	x	
1	21	T-13B	T-13B	EDG 1-2 K-6B JACKET WATER SURGE TK	Y	Y	Y	Y	N	I	T, H		x	x	x	x	
1	21	T-2	T-2	CONDENSATE STORAGE TANK	Y	Y	Y		Y	I						x	
1	21	T-25A	T-25A	EMERGENCY DIESEL GEN 1-1 K-6A DAY TANK	Y	Y	Y		N	I			x	x	x	x	
1	21	T-25B	T-25B	EMERGENCY DIESEL GEN 1-2 K-6B DAY TANK	Y	Y	Y		N	I			x	x	x	x	
1	21	T-31B	T-31B	EDG 1-1 K-6A AIR STARTING TANK	Y	Y	Y		N	I	T, H		x	x	x	x	
1	21	T-31C	T-31C	EDG 1-2 K-6B AIR STARTING TANK	Y	Y	Y		N	I	T, H		x	x	x	x	
1	21	T-58	T-58	SAFETY INJECTION REFUELING WATER TANK	Y	Y	Y		Y	O		x			x		
1	10	VF-26A	VF-26A	AIR HANDLING UNIT V-26A FILTER	Y	Y	N		N	I							

Table 9.4.1

UNIT	SQUG Equip Class	Current Equipment ID	SSEL Equipment ID	Equipment Description	SCREEN 1	SCREEN 2	SCREEN 3	SCREEN 4					Five Safety Functions				
					Seismic 1?	Undergo Regular Configuration Inspection?	Maintains at least one of the 5 Safety Functions	Replaced	IPEEE	Environment?			Reactivity Control	Pressure Control	Inventory Control	Decay Heat Removal	Containment
										Inside/ Outside (I/O)	High Temp/ Humidity? (T/H)	Borated System					
1	10	**VF-26B**	VF-26B	**AIR HANDLING UNIT V-26B FILTER**	Y	Y	N		N	I							
1	0	**PO-1711**	PO-1711	**MODULATING DAMPER D-20 POSITIONER**	Y	Y	N	Y	N	I							
1	0	**PO-1712**	PO-1712	**MODULATING DAMPER D-21 POSITIONER**	Y	Y	N	Y	N	I							
1	1	EB-01	EB-01	480 VOLT MOTOR CONTROL CENTER	Y	Y	Y		Y	I							
1	1	EB-02	EB-02	480 VOLT MOTOR CONTROL CENTER	Y	Y	Y		Y	I							
1	8	SV-0779C	SV-0779C	E-50B ATMOSPHERIC DUMP	N	N	Y	Y	Y	I							
1	8	SV-0780C	SV-0780C	E-50B ATMOSPHERIC DUMP	N	N	Y	Y	Y	I							
1	10	D-26	D-26	V-24A GRAVITY DAMPER	N	N	Y	Y	N	I	T, H						
1	10	D-27	D-27	V-24B GRAVITY DAMPER	N	N	Y	Y	N	I	T, H						
1	10	D-28	D-28	V-24B GRAVITY DAMPER	N	N	Y	Y	N	I	T,H						
1	10	D-29	D-29	V-24C GRAVITY DAMPER	N	N	Y	Y	N	I	T, H						
1	20	EC-22	EC-22	480 VOLT MOTOR CONTROL CENTER	Y	Y	Y		N	I	T, H						
1	20	EC-26	EC-26	480 VOLT MOTOR CONTROL CENTER	Y	Y	Y		N	I	T, H						

Table 9.4.2

SWEL #1	EQUIPMENT ID	DESCRIPTION	BLDG.	ELEV.	ROOM	TRAIN	SYSTEM TYPE	CLASS	ENVIRONMENT	ANC	DWG
(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
SWEL1-001	EB-07	480 VOLT MCC NO. 7	Aux Bldg	590	121	L	Support	1	I	X	E-12 & E-134
SWEL1-002	EB-21	480 VOLT MOTOR CONTROL CENTER #21	Aux Bldg	607	224	L	Support	1	I	X	E-12 & E-251
SWEL1-003	EB-22	480 VOLT MOTOR CONTROL CENTER #22	Aux Bldg	607	223	R	Support	1	I		E-12 & E-134
SWEL1-004	EB-23	480 VOLT MOTOR CONTROL CENTER #23	Aux Bldg	607	224	L	Support	1	I	X	E-12 & E-134
SWEL1-005	EB-24	480 VOLT MOTOR CONTROL CENTER #24	Aux Bldg	607	224	R	Support	1	I		E-12 & E-134
SWEL1-006	EB-11	480 VOLT LOAD CENTER BUS NO. 11	Aux Bldg	607	224	L	Support	2	I	X	E-135
SWEL1-007	EB-12	480 VOLT LOAD CENTER BUS NO. 12	Aux Bldg	607	224	R	Support	2	I		E-135
SWEL1-008	EB-19	480 VOLT LOAD CONTROL CENTER NO. 19	Aux Bldg	607	725	L	Support	2	I	X	E-1, SH 3; E-4, SH2
SWEL1-009	EB-20	480 VOLT LOAD CONTROL CENTER NO. 20	Aux Bldg	607	725	R	Support	2	I		E-1, SH 3; E-4, SH 2
SWEL1-010	EA-11	Deleted - SEE NOTE 1									
SWEL1-011	EA-12	Deleted - SEE NOTE 1									
SWEL1-012	EX-11	STATION POWER TRANSFORMER NO. 11	Aux Bldg	607	224	L	Support	4	I	X	E-12 & E-133
SWEL1-013	EX-12	STATION POWER TRANSFORMER NO. 12	Aux Bldg	607	224	R	Support	4	I		E-12 & E-133
SWEL1-014	EX-19	STATION POWER TRANSFORMER #19	Aux Bldg	607	725	L	Support	4	I		E-12 & E-133
SWEL1-015	EX-20	STATION POWER TRANSFORMER #20	Aux Bldg	607	725	R	Support	4	I	X	E-133
SWEL1-016	P-52B	COMPONENT COOLING WATER PUMP	Aux Bldg	590	123	R	Support	5	I		E-12 & E-259
SWEL1-017	P-54C	CONTAINMENT SPRAY PUMP	Aux Bldg	570	005	L	Front Line	5	B, I	X	E-12
SWEL1-018	P-67B	LOW PRESSURE SAFETY INJECTION PUMP	Aux Bldg	570	005	L	Front Line	5	B, I		E-12 & E-248
SWEL1-019	P-8A	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP	Turbine Bldg	571	007	L	Front Line	5	I	X	E-12 & E-196
SWEL1-020	P-8B	STEAM DRIVEN AUXILIARY FEEDWATER PUMP	Turbine Bldg	571	007	L	Front Line	5	I		M-207-2
SWEL1-021	P-8C	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP	Aux Bldg	570	005	R	Front Line	5	I	X	E-12 & E-196, SH 8
SWEL1-022	P-7A	SERVICE WATER PUMP	Turbine Bldg	590	136	R	Support	6	I,H	X	E-12 & E-154
SWEL1-023	P-7B	SERVICE WATER PUMP	Turbine Bldg	590	136	L	Support	6	I,H		E-12 & E-154
SWEL1-024	P-7C	SERVICE WATER PUMP	Turbine Bldg	590	136	R	Support	6	I,H	X	E-12 & E-154
SWEL1-025	CV-0736A	P-8C FLOW CONTROL TO E-50B	Aux Bldg	570	005	R	Support	7	I		M-207-2
SWEL1-026	CV-0737A	P-8C FLOW CONTROL TO E-50A	Aux Bldg	570	005	R	Support	7	I		M-207-2
SWEL1-027	CV-0861	CAC VHX-1 HI CAPACITY SW OUTLET	Containment	590	143	R	Support	7	I		M-208-1B
SWEL1-028	CV-1359	NON-CRITICAL SW HEADER ISOLATION	Turbine Bldg	590	136	L&R	Support	7	I,H		M-213
SWEL1-029	MO-3189	LPSI PUMP P-67B SUCTION FROM SIRWT	Aux Bldg	570	005	L	Front Line	8	B, I		E-244 (Q), SH 8 & 9

Table 9.4.2

SWEL #1	EQUIPMENT ID	DESCRIPTION	BLDG.	ELEV.	ROOM	TRAIN	SYSTEM TYPE	CLASS	ENVIRONMENT	ANC	DWG
SWEL1-030	SV-1359	NONCRITICAL SERVICE WATER SHUTOFF	Turbine Bldg	590	136	L&R	Support	8	I,H		E-219
SWEL1-031	SV-1470	EDG 1-1 FUEL OIL RESVR INLET FROM DAY TANK	Aux Bldg	590	116	L	Support	8	I, T, H		E-140
SWEL1-032	SV-1471	EDG 1-2 FUEL OIL RESVR INLET FROM DAY TANK	Aux Bldg	590	116B	R	Support	8	I, T, H		E-140
SWEL1-033	V-24A	K-6A DIESEL GENERATOR ROOM VENT FAN	Aux Bldg	590	116	L	Support	9	I, T, H		E-12 & E-216
SWEL1-034	V-24C	K-6B DIESEL GENERATOR ROOM VENT FAN	Aux Bldg	590	116B	R	Support	9	I, T, H		E-5-5C, E-280-1A
SWEL1-035	V-3A	CONTAINMENT COOLER RECIRCULATION FAN	Containment	590	143	R	Support	9	I	X	E-280, SH 1
SWEL1-036	V-95	CONTROL ROOM VENTILATION MAIN SUPPLY FAN	Aux Bldg	639.67	300	L	Support	9	I	X	E-928-8
SWEL1-037	V-96	CONTROL ROOM VENTILATION MAIN SUPPLY FAN	Aux Bldg	639.67	300A	R	Support	9	I		E-928-8
SWEL1-038	VDX-95	Deleted - SEE NOTE 2									
SWEL1-039	VDX-96	Deleted - SEE NOTE 2									
SWEL1-040	VHX-1	CONTAINMENT AIR COOLER	Containment	590	143	R	Front Line	10	I	X	M-208-1B
SWEL1-041	VHX-27B	Deleted - SEE NOTE 3									
SWEL1-042	VC-10	CONTROL ROOM HVAC REFRIG CONDENSING UNIT	Aux Bldg	629.17	300A	R	Support	11	I		M-218-7
SWEL1-043	VC-11	CONTROL ROOM HVAC REFRIG CONDENSING UNIT	Aux Bldg	629.17	300	L	Support	11	I	X	M-218-7
SWEL1-044	ED-11A	125 VOLTS DC DISTRIBUTION PANEL	Aux Bldg	590	116A	L	Support	14	I	X	E-8, SH 1
SWEL1-045	ED-21A	125 VOLTS DC DISTRIBUTION PANEL	Aux Bldg	590	116B	R	Support	14	I		E-8, SH 1
SWEL1-046	EY-10	PREFERRED AC BUS NO. 1 INVERTER	Aux Bldg	607	224	L	Support	14	I		E-8, SH 1
SWEL1-047	EY-20	PREFERRED AC BUS NO. 2 INVERTER	Aux Bldg	607	224	R	Support	14	I		E-8, SH 1
SWEL1-048	EY-30	PREFERRED AC BUS NO. 3 INVERTER	Aux Bldg	607	224	L	Support	14	I		E-8, SH 1
SWEL1-049	EY-40	PREFERRED AC BUS NO. 4 INVERTER	Aux Bldg	607	224	R	Support	14	I		E-8, SH 1
SWEL1-050	ED-01	MAIN STATION BATTERY LEFT CHANNEL	Aux Bldg	607	225A	L	Support	15	I	X	E-8, SH 1
SWEL1-051	ED-02	MAIN STATION BATTERY RIGHT CHANNEL	Aux Bldg	607	225	R	Support	15	I		E-8, SH 1
SWEL1-052	ED-06	INVERTER NO. 1	Aux Bldg	607	224	L	Support	16	I	X	E-8, SH 1
SWEL1-053	ED-07	INVERTER NO. 2	Aux Bldg	607	224	R	Support	16	I		E-8, SH 1
SWEL1-054	ED-08	INVERTER NO. 3	Aux Bldg	607	224	L	Support	16	I	X	E-8, SH 1
SWEL1-055	ED-09	INVERTER NO. 4	Aux Bldg	607	224	R	Support	16	I		E-8, SH 1
SWEL1-056	ED-15	BATTERY CHARGER NO. 1	Aux Bldg	607	224	L	Support	16	I	X	E-8, SH 1
SWEL1-057	ED-16	BATTERY CHARGER NO. 2	Aux Bldg	607	224	R	Support	16	I		E-8, SH 1
SWEL1-058	ED-17	BATTERY CHARGER NO. 3	Aux Bldg	607	224	L	Support	16	I	X	E-8, SH 2
SWEL1-059	ED-18	BATTERY CHARGER NO. 4	Aux Bldg	607	224	R	Support	16	I		E-8, SH 1

Table 9.4.2

SWEL #1	EQUIPMENT ID	DESCRIPTION	BLDG.	ELEV.	ROOM	TRAIN	SYSTEM TYPE	CLASS	ENVIRONMENT	ANC	DWG
SWEL1-060	K-6A	EMERGENCY DIESEL GENERATOR 1-1	Aux Bldg	590	116	L	Support	17	I, T, H	X	E-140
SWEL1-061	K-6B	EMERGENCY DIESEL GENERATOR 1-2	Aux Bldg	590	116B	R	Support	17	I, T, H		E-140
SWEL1-062	FT-0727	AUX FEEDWATER PPS P-8A & P-8B FLOW TRANS	Aux Bldg	590	123	L	Support	18	I	X	E-79, SH 3, 3A & 3B
SWEL1-063	FT-0736A	AUX FW PUMP P-8C TO STM GEN E-50B FLOW IND	Aux Bldg	570	005	R	Support	18	I		E-79, SH 3
SWEL1-064	FT-0737A	AUX FW PUMP P-8C TO STM GEN E-50A FLOW	Aux Bldg	570	005	R	Support	18	I		E-79
SWEL1-065	FT-0749	AUX FEEDWATER PPS P-8A & P-8B FLOW TRANS	Aux Bldg	590	123	L	Support	18	I	X	E-79, SH 3B
SWEL1-066	I/P-0727	AUX FEEDWATER FLOW CONTROL TO S/G E-50B	Aux Bldg	590	123	L	Support	18	I	X	E-79, SH 3, 3A & 3B
SWEL1-067	I/P-0736A	AFW FLOW CNTRL TO S/G E-50B	Aux Bldg	570	005	R	Support	18	I		E-79, SH 3
SWEL1-068	I/P-0737A	AFW FLOW CONTROL TO S/G E-50A	Aux Bldg	570	005	R	Support	18	I		E-79
SWEL1-069	I/P-0749	AUX FEEDWATER FLOW CONTROL TO S/G E-50A	Aux Bldg	590	123	L	Support	18	I	X	E-79, SH 3B
SWEL1-070	LT-0331	SIRW TANK CKT 2 LEVEL TRANSMITTER	Aux Bldg	644	OUTSIDE	R	Support	18	B, O	X	E-358
SWEL1-071	LT-0332A	SIRW LEVEL TRANSMITTER	Aux Bldg	644	OUTSIDE	L	Support	18	B, O		E-358
SWEL1-072	LT-2021	CONDENSATE STORAGE TANK T-2 HIGH-LOW LEVEL	Turbine Bldg	590	OUTSIDE	R	Support	18	O	X	M-220-1
SWEL1-073	LT-2022	CONDENSATE STORAGE TANK HI-LO LEVEL TRANS	Turbine Bldg	590	OUTSIDE	L	Support	18	O		M-220-1
SWEL1-074	PT-0741A	AUX FW PUMPS P-8A AND P-8B LOW SUCTION	Turbine Bldg	571	007	L	Support	18	I	X	E-81
SWEL1-075	PT-0741B	AUX FW PUMPS P-8A AND P-8B LOW SUCTION	Turbine Bldg	571	007	L	Support	18	I	X	E-81
SWEL1-076	PT-0741DD	AUX FW PUMPS P-8A AND P-8B LOW SUCTION	Turbine Bldg	571	007	L	Support	18	I	X	E-81
SWEL1-077	PT-0762A	AUX FW PUMP P-8C LOW SUCTION PRESSURE TRIP	Aux Bldg	570	005	R	Support	18	I		E-81
SWEL1-078	PT-0762B	AUX FW PUMP P-8C LOW SUCTION PRESSURE TRIP	Aux Bldg	570	005	R	Support	18	I		E-81
SWEL1-079	PT-0762C	AUX FW PUMP P-8C LOW SUCTION PRESSURE TRIP	Aux Bldg	570	005	R	Support	18	I		E-81
SWEL1-080	TS-1820	EDG RM VENT FAN V-24D AUTOMATIC TEMP SW	Aux Bldg	590	116B	R	Support	18	I, T, H		E-280, SH 1
SWEL1-081	TS-1822	EDG RM VENT FAN V-24C AUTOMATIC TEMP SW	Aux Bldg	590	116B	R	Support	18	I, T, H		E-280, SH 1
SWEL1-082	TS-1828	EDG RM VENT FAN V-24A AUTOMATIC TEMP SW	Aux Bldg	590	116	L	Support	18	I, T, H		E-280, SH 1
SWEL1-083	TS-1844	EDG RM VENT FAN V-24B AUTOMATIC TEMP SW	Aux Bldg	590	116	L	Support	18	I, T, H		E-280, SH 1
SWEL1-084	TE-1733	Deleted - SEE NOTE 2									
SWEL1-085	TE-1734	Deleted - SEE NOTE 2									
SWEL1-086	EC-187	AUX FEEDWATER CONTROL	Aux Bldg	607	223	N	Support	20	I	X	M-207-1
SWEL1-087	EJ-1005	AUX FEEDWATER RELAY CONTROL	Aux Bldg	607	223	N	Support	20	I	X	
SWEL1-088	EJ-1006	AUX. FEEDWATER RELAY CONTROL	Aux Bldg	607	223	N	Support	20	I	X	
SWEL1-089	EJ-1051	AUX FEEDWATER CONTROLS	Aux Bldg	607	223	N	Support	20	I		

Table 9.4.2

SWEL #1	EQUIPMENT ID	DESCRIPTION	BLDG.	ELEV.	ROOM	TRAIN	SYSTEM TYPE	CLASS	ENVIRONMENT	ANC	DWG
SWEL1-090	EJ-1052	AUX. FEEDWATER RELAY CONTROLS	Aux Bldg	607	223	N	Support	20	I		
SWEL1-091	EJ-9400	BUS 1-C UNDER VOLTAGE RELAYS	Aux Bldg	590	116A	L	Support	20	I	X	
SWEL1-092	EJ-9401	BUS 1-D UNDERVOLTAGE RELAYS	Aux Bldg	607	223	R	Support	20	I		
SWEL1-093	EJL-422	72-02 BREAKER BOX	Aux Bldg	607	225	R	Support	20	I		
SWEL1-094	EJL-423	72-01 BREAKER BOX	Aux Bldg	607	225A	L	Support	20	I	X	
SWEL1-095	42-1/RPS	Control Rod Clutch Breaker	Aux Bldg	607	224	L	Front Line	20	I	X	
SWEL1-096	E-54A	COMPONENT COOLING WATER HEAT EXCHANGER	Aux Bldg	590	123	N	Support	21	I	X	M-209-3
SWEL1-097	E-54B	COMPONENT COOLING HEAT EXCHANGER	Aux Bldg	590	123	N	Support	21	I	X	M-209-3, M-208-1A
SWEL1-098	E-60A	SHUTDOWN COOLING HEAT EXCHANGER	Aux Bldg	570	005	N	Support	21	B, I		M-204-1, M-209-2
SWEL1-099	E-60B	SHUTDOWN COOLING HEAT EXCHANGER	Aux Bldg	570	005	N	Support	21	B, I		M-204-1, M-209-2
SWEL1-100	T-13A	EDG K-6A JACKET WATER SURGE TANK	Aux Bldg	590	116	L	Support	21	I, T, H	X	M-214-1
SWEL1-101	T-13B	EDG 1-2 K-6B JACKET WATER SURGE TK	Aux Bldg	590	116B	R	Support	21	I, T, H		M-214-1
SWEL1-102	T-2	CONDENSATE STORAGE TANK	Turbine Bldg	590	OUTSIDE	N	Front Line	21	O	X	M-220-1
SWEL1-103	T-25A	EMERGENCY DIESEL GEN 1-1 K-6A DAY TANK	Aux Bldg	590	146	L	Support	21	I	X	M-214-1
SWEL1-104	T-25B	EMERGENCY DIESEL GEN 1-2 K-6B DAY TANK	Aux Bldg	590	147	R	Support	21	I		M-214-1
SWEL1-105	T-31B	EDG 1-1 K-6A AIR STARTING TANK	Aux Bldg	590	116	L	Support	21	I, T, H	X	M-214-1
SWEL1-106	T-31C	EDG 1-2 K-6B AIR STARTING TANK	Aux Bldg	590	116B	R	Support	21	I, T, H	X	M-214-1
SWEL1-107	T-58	SAFETY INJECTION REFUELING WATER TANK	Aux Bldg	644	808	N	Front Line	21	B, O	X	M-204-1B
SWEL1-108	VF-26A	AIR HANDLING UNIT V-26A FILTER	Aux Bldg	629.17	300	L	Support	19	I	X	M-218-6A
SWEL1-109	VF-26B	AIR HANDLING UNIT V-26B FILTER	Aux Bldg	629.17	300A	R	Support	19	I		M-218-6A
SWEL1-110	PO-1711	MODULATING DAMPER D-20 POSITIONER	Aux Bldg	639.67	300	L	Support	0	I	X	E-271, SH 19
SWEL1-111	PO-1712	MODULATING DAMPER D-21 POSITIONER	Aux Bldg	639.67	300A	R	Support	0	I		E-271, SH 19

NOTE 1: During the Walkdown of these components, it was determined that these two items required extensive disassembly (including a Bus Outage) to be able to access the anchorage in the rear of the cubicles. Hence, they were removed from the list for inspections. However, the balance of the inspections for these items was completed.

NOTE 2: During the Walkdown of these components, it was determined that these four items were actually internal sub-components of larger items, which were either on the SWEL for inspection or were added to the SWEL. These sub-components would have been considered covered under the Rule-of-the-Box for the A-46/IPEEE Walkdowns. Hence, they were removed from the SWEL.

NOTE 3: During the Walkdown of this component, it was determined that it is suspended from the ceiling of the room (18' above the floor) and that all the anchorage and mounting details are not visible for remote inspection. Hence, it was removed from the SWEL.

Fukushima Seismic Walkdowns - Seismic Walkdown Equipment List (SWEL) 2 – Spent Fuel Pool Equipment and Rapid Drain-Down Equipment

Table 9.4.3 – Base List 2 (BL 2)

BL2#	EQUIPMENT ID	DESCRIPTION	BLDG	ELEV	ROOM	TRAIN	SYSTEM TYPE	CLASS	ENVIR.	N/R
20001	**P-51A**	SPENT FUEL POOL COOLING PUMP	Aux.	590	115	L	SFP	5	I	N
20002	**P-51B**	SPENT FUEL POOL COOLING PUMP	Aux.	590	115	R	SFP	5	I	N
20003	**P-82**	SFP RECIRCULATION BOOSTER PUMP	Aux.	590	115	-	SFP	5	I	Y
20004	**E-53A**	SPENT FUEL POOL HEAT EXCHANGER	Aux.	590	115	B	SFP	21	I	N
20005	**E-53B**	SPENT FUEL POOL HEAT EXCHANGER	Aux.	590	115	B	SFP	21	I	N
20006	BS-2100	P-51A BASKET STRAINER	Aux.	590	115	L	SFP	0	I	N
20007	BS-2101	P-51B BASKET STRAINER	Aux.	590	115	R	SFP	0	I	N
2008	DOOR-950	SFP SOUTH TILT PIT GATE	Aux.	590	222	-	SFP	0	I/H	N
20009	DOOR-951	SFP NORTH TILT PIT GATE	Aux.	590	221	-	SFP	0	I/H	N
20010	T-50	SFP DEMINERALIZER	Aux.	590	114	-	SFP	21	I	Y
20011	F-50	SPENT FUEL POOL FILTER	Aux.	590	113	-	SFP	21	I	N
20012	YS-2101	T-50 OUTLET WYE STRAINER	Aux.	590	114	-	SFP	0	I	N

Fukushima Seismic Walkdowns - Seismic Walkdown Equipment List (SWEL) 2 – Spent Fuel Pool Equipment and Rapid Drain-Down Equipment

Table 9.4.4 – Rapid Drain-Down List (RDD)

RDD#	DESCRIPTION	BASIS FOR INCLUSION/EXCLUSION	RDD
R-00	Review of P&ID M-221 Sh. 2 and the associated Piping Drawings	There is no piping or equipment connected to the Spent Fuel Pool that can cause Rapid Drain-Down	N

Table 9.4.5 – Seismic Walkdown Equipment List 2 (SWEL 2)

SWEL2#	EQUIP ID	DESCRIPTION	BLD G	ELEV	ROOM	TRAIN	SYS TYPE	CLASS	ENVIR	N/R	RDD
SWEL2-001	P-51A	SPENT FUEL POOL COOLING PUMP	Aux.	590	115	L	SFP	5	I	N	N/A
SWEL2-002	P-51B	SPENT FUEL POOL COOLING PUMP	Aux.	590	115	R	SFP	5	I	N	N/A
SWEL2-003	P-82	SFP RECIRCULATION BOOSTER PUMP	Aux.	590	115	-	SFP	5	I	Y	N/A
SWEL2-004	E-53A	SPENT FUEL POOL HEAT EXCHANGER	Aux.	590	115	B	SFP	21	I	N	N/A
SWEL2-005	E-53B	SPENT FUEL POOL HEAT EXCHANGER	Aux.	590	115	B	SFP	21	I	N	N/A

Seismic Walkdown Equipment List – SWEL-1

Prepared by: Alan L. Lyon Alan L. Lyon Date: 11/9/12

Equipment Selection Personnel

Prepared by: Brian A. Brogan Brian Brogan Date: 11/14/12

Equipment Selection Personnel

Prepared by: E. Rick Tiffany Eric R Tiffany Date: 11/9/2012

Equipment Selection Personnel

Prepared by: David M. Kennedy David Kennedy Date: 11/13/12

Equipment Selection Personnel

Seismic Walkdown Equipment List – SWEL-2

Prepared by: Alan L. Lyon Alan L. Lyon Date: 11/9/12

Equipment Selection Personnel

Seismic Walkdown Equipment List Approval – SWEL-1 and SWEL-2

Reviewed by: P David MacMaster P D MacMaster Date: 11-13-12

Peer Reviewer

Concurrence by: Robert A. White Robert A White Date: 11-9-12

Operations Personnel

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 001

Equipment ID No. *EB-07* Equip. Class[1] *1, MOTOR CONTROL CENTERS AND WALL MOUNTED CONTACTORS*

Equipment Description *480 VOLT MCC NO.7*

Location: Bldg. *AUX* Floor El. *590* Room, Area *121*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   Anchorage of equipment consists of anchors buried in grout pockets in the floor along the front side of the MCC and bracing along the top of the cabinets back to the wall.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   Anchors for bracing are painted, sheet metal screws along top of cabinet. Anchors along the front of panel are buried in the floor and not visible.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The floor is covered with an epoxy coat and no cracks are visible. No cracks observed in wall for the brace anchors.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 001

Equipment ID No. *EB-07* Equip. Class[1] *1, MOTOR CONTROL CENTERS AND WALL MOUNTED CONTACTORS*

Equipment Description *480 VOLT MCC NO.7*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☒ U☐ N/A☐
   Drawing C-103, Sh. 1, Rev. 11 was used to verify anchorage configuration.
   The bracing of the top of the cabinets back to the south wall of the room consists of a 2L 2x1-1/4x3/16 LLV with approximate 3" stitch welds at 9" centers connecting angles together. Drawing C-103, Sh. 1, Rev. 11 shows a WT 2x6.5. The use of double angle instead of a WT is judged to be not a seismic concern. Further evaluation is required under licensing basis evaluation, LB-04. CR-PLP-2012-06707 has been initiated.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☐ N☒ U☐
   Drawing C-103, Sh. 1, Rev. 11 was used to verify anchorage configuration.
   The bracing of the top of the cabinets back to the south wall of the room consists of a 2L 2x1-1/4x3/16 LLV with approximate 3" stitch welds at 9" centers connecting angles together. Drawing C-103, Sh. 1, Rev. 11 shows a WT 2x6.5. The use of double angle instead of a WT is judged to be not a seismic concern. Further evaluation is required under licensing basis evaluation, LB-04. CR-PLP-2012-06707 has been initiated.

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐
   Adjacent cabinet EB-08 is non-safety related per Al Lyon; however, the cabinet is anchored and braced in the same manner as EB-07, therefore judged to be okay. Cabinet is adjacent to EC-40, and impact between cabinets is credible but insignificant since panel does not contain essential relays per SEWS sht. 3 of 11.
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   Light fixtures attached to wall but are not a credible interaction since target is outside zone of influence.
   There is an approximate 3/4" clear space between bottom of cable tray support and top of cabinet and cabinet bracing. The support is rigid and load is relatively minimal therefore deflection is judged to be less then 3/4" under a seismic event given the site vertical seismic acceleration of 0.3g.
   Qualified block wall, C104.11/Q, per drawing C-104, Rev. 33, along the north side of the component

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 001

Equipment ID No. *EB-07* Equip. Class[1] *1, MOTOR CONTROL CENTERS AND WALL MOUNTED CONTACTORS*

Equipment Description *480 VOLT MCC NO.7*

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
   Attached cable and conduit with bends.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☐ N☒ U☐
    MCC bucket 52-721 has exposed wire and appears that a spare component was removed. Further evaluation is required under licensing basis evaluation, LB-05. CR-PLP-2012-06639 has been initiated.

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Although buried anchorage along the front of the cabinet is not visible, spacing and configuration for steel attachment matches what is shown in the drawing and SEWS sht. 3 of 11, therefore anchors are judged to meet their configuration.

Evaluated by: *Kevin Bessell* Date: *10/9/2012*

John Kao *10/9/2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

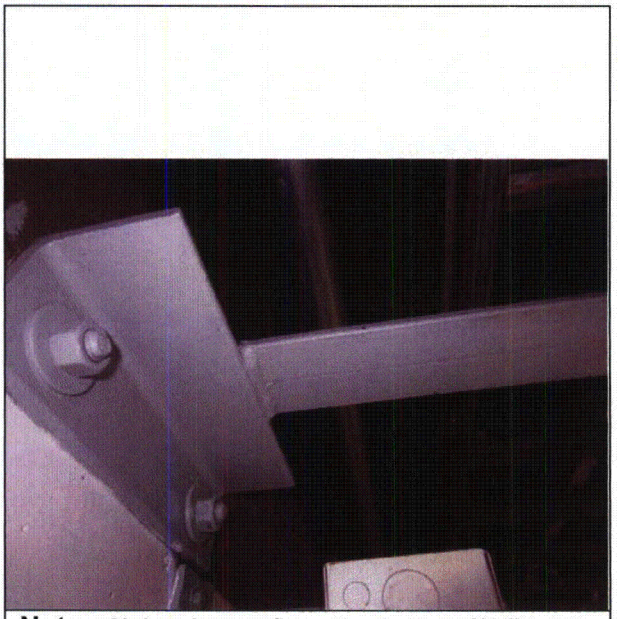
Seismic Walkdown Checklist (SWC) SWEL1- 001

Equipment ID No. *EB-07* Equip. Class[1] *1, MOTOR CONTROL CENTERS AND WALL MOUNTED CONTACTORS*

Equipment Description *480 VOLT MCC NO.7*

Photographs

Note: *Equipment.*



Note: *2L bracing configuration in lieu of WT2x6.5 as shown in drawing C-103, Sh. 1, Rev. 11.*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

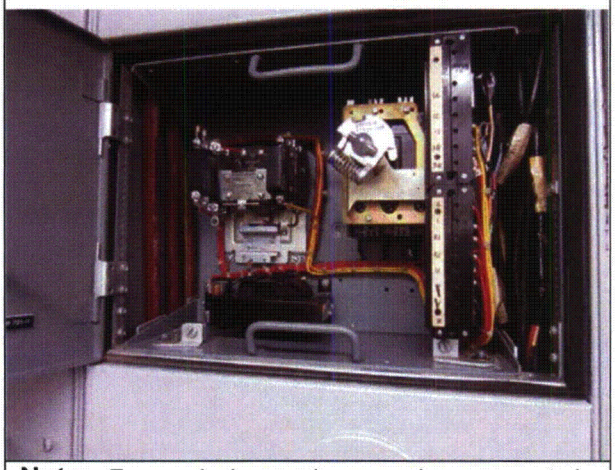
Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 001

Equipment ID No. *EB-07* Equip. Class[1] *1, MOTOR CONTROL CENTERS AND WALL MOUNTED CONTACTORS*

Equipment Description *480 VOLT MCC NO.7*



Note: *Exposed wires and removed components in MCC bucket 52-721.*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 002

Equipment ID No. *EB-21* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #21*

Location: Bldg. *AUX* Floor El. *607* Room, Area *224*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   There are 4 welds connected the cabinet to a base plate on the front and backside of the cabinet. The base plate is bolted with 6 anchor bolts in the front and the back of the cabinet to a grout pad that extends up from the ground slab.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   There is no corrosion.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The grout pad beneath the cabinets extends up from the concrete floor slab. There are hairline cracks in the concrete slab and grout pad that do not affect the structural integrity of the grout pad or anchorage.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 002

Equipment ID No. *EB-21* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #21*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   EA-POC0007899-SEWS-EB21 was used to verify the anchorage for this equipment.

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   There is a nearby qualified block wall, reference Drawing C-107 Sheet 1. Cable tray above equipment appears to be well supported.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
   Attached lines are flexible cable.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 002

Equipment ID No. *EB-21* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #21*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

The following buckets in the cabinet required excessive effort for disassembly and were not included in the walkdown(there were no issues with similar buckets on equipment so there was no reason to believe there would be issues in these buckets):

52-2127

52-3127

Evaluated by: *Alex Smerch* Date: *10-17-2012*

Paul Klein *10-17-2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

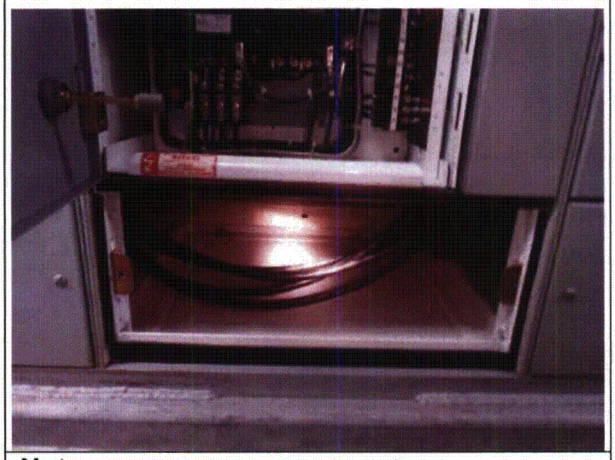
Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 002

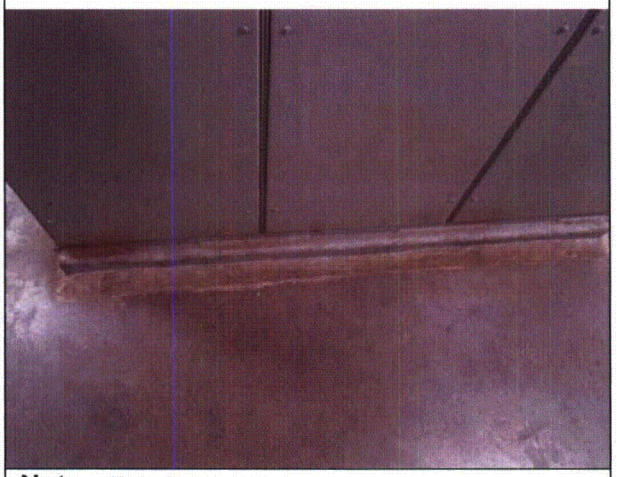
Equipment ID No. *EB-21* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #21*

Photographs



Note: *EB-21 With Bucket Door Open*



Note: *Exterior Anchorage*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

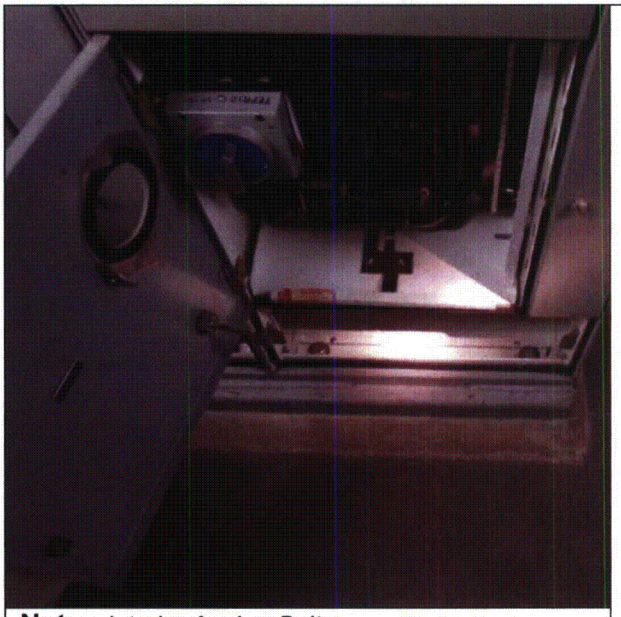
Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 002

Equipment ID No. *EB-21* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #21*



Note: *Interior Anchor Bolts*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 003

Equipment ID No. *EB-22* Equip. Class[1] *1-MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #22*

Location: Bldg. *AUX* Floor El. *607* Room, Area *223*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The anchorage consists of exterior welds between the cabinet and a baseplate which is bolted with 12 bolts (6 front and back) to an approximately 2" grout pad.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   There was no corrosion on the bolts.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The 12 bolts were anchored through a grout pad which rests on the concrete floor slab.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 003

Equipment ID No. *EB-22* Equip. Class[1] *1-MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #22*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐
It is not in close proximity to flexible equipment.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☐ N☒ U☐ N/A☐
There is a 2" line that runs above EB-22 approximately 12 feet above the slab that is unsupported for approximately 16.5'. This was judged to be an excessive span for that small of a pipe diameter. Further investigation is required and LB#20 has been initiated. For identification purposes it was noted that conduit x3316 is attached to the span. CR-PLP-2012-06742 has been generated for this.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☐ N☒ U☐
There is a 2" line that runs above EB-22 approximately 12 feet above the slab that is unsupported for approximately 16.5'. This was judged to be an excessive span for that small of a pipe diameter. Further investigation is required and LB#20 has been initiated. For identification purposes it was noted that conduit x3316 is attached to the span. CR-PLP-2012-06742 has been generated for this.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 003

Equipment ID No. *EB-22* Equip. Class[1] *1-MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #22*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Boxes 52-2227 and 52-2237 were not opened as they required excessive effort to be opened. All others were opened and inspected.

Evaluated by: *Alex Smerch* Date: *10-16-2012*

Paul Klein *10-16-2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

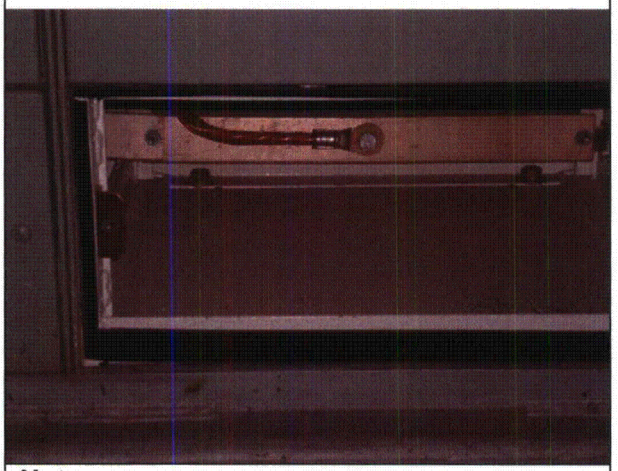
Seismic Walkdown Checklist (SWC) SWEL1- 003

Equipment ID No. *EB-22* Equip. Class[1] *1-MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #22*

Photographs

Note: *EB-22*



Note: *Interior Anchorage From Concrete to Baseplate*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 5 of 5

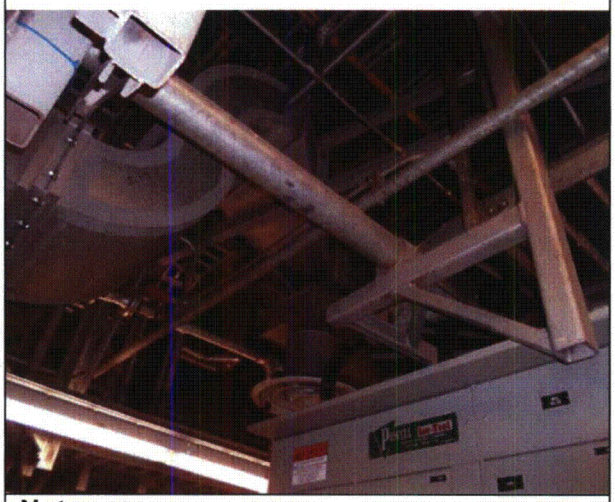
Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 003

Equipment ID No. *EB-22* Equip. Class[1] *1-MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #22*

Note: *Exterior Welds on Cabinet*



Note: *2" Line over EB-22*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 004

Equipment ID No. *EB-23* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #23*

Location: Bldg. *AUX* Floor El. *607* Room, Area *224*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   There are 4 welds connected the cabinet to a base plate on the front and backside of the cabinet. The base plate is bolted with 6 anchor bolts in the front and the back of the cabinet to a grout pad that extends up from the ground slab.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   There is no corrosion.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The grout pad beneath the cabinets extends up from the concrete floor slab. There are hairline cracks in the concrete and grout pad that do not affect the structural integrity of the grout pad or anchorage.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 004

Equipment ID No. *EB-23* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #23*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   EA-POC0007899-SEWS-EB23 was used to verify the anchorage for this equipment.

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   There is a nearby qualified block wall, reference drawing C-107 Sheet 1. Cable tray above equipment appears to be well supported.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
   Attached lines are flexible cable.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 004

Equipment ID No. *EB-23* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #23*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

The following buckets in the cabinet required excessive effort for disassembly and were not included in the walkdown(there were no issues with similar buckets on equipment so there was no reason to believe there would be issues in these buckets):

52-2327

52-2337

Evaluated by: *Alex Smerch* Date: *10-17-2012*

Paul Klein *10-17-2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

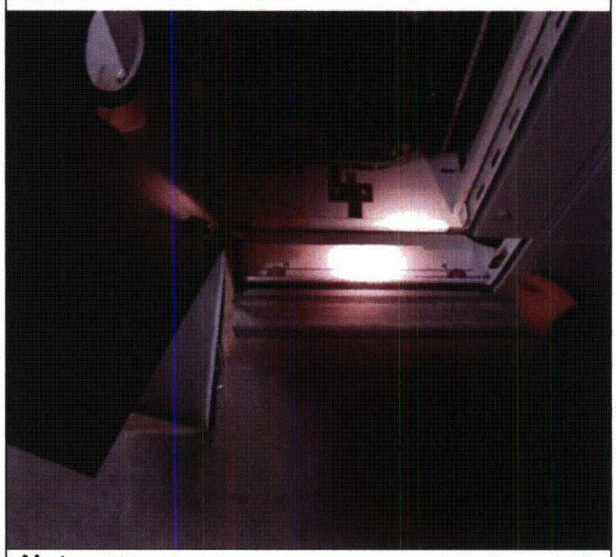
Seismic Walkdown Checklist (SWC) SWEL1- 004

Equipment ID No. *EB-23* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #23*

Photographs

Note: *EB-23*



Note: *Front Anchorage*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

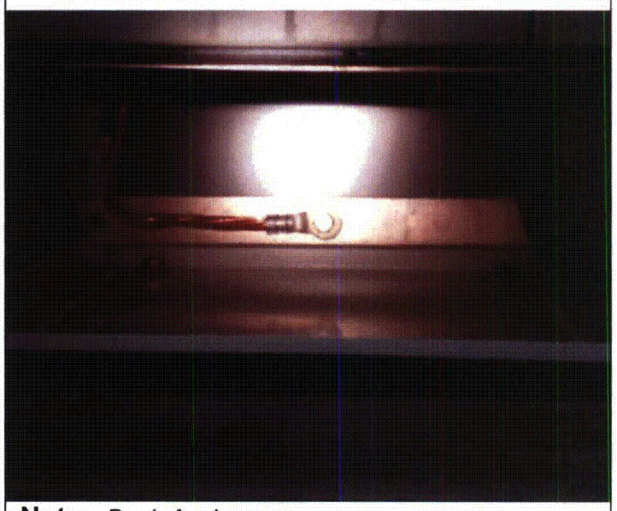
Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 004

Equipment ID No. *EB-23* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #23*



Note: *Back Anchorage*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 005

Equipment ID No. *EB-24* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #24*

Location: Bldg. *AUX* Floor El. *607* Room, Area *224*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   There are 4 welds connected the cabinet to a base plate on the front and backside of the cabinet. The base plate is bolted with 6 anchor bolts in the front and the back of the cabinet to a grout pad that extends up from the ground slab.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   There is no corrosion.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The grout pad beneath the cabinets extends up from the concrete floor slab. There are hairline cracks in the concrete that do not affect the structural integrity of the grout pad or anchorage.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 005

Equipment ID No. *EB-24* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #24*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐
There is a 2" gap to a nearby column that is sufficient to prevent any seismic interaction effects.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
Cable tray above equipment appears to be well supported.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
Attached lines are flexible cable.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 005

Equipment ID No. *EB-24* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #24*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

The following buckets in the cabinet required excessive effort for disassembly and were not included in the walkdown(there were no issues with similar buckets on equipment so there was no reason to believe there would be issues in these buckets):

52-2427

52-2437

Evaluated by: *Alex Smerch* Date: *10-17-2012*

Paul Klein *10-17-2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 005

Equipment ID No. *EB-24* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #24*

Photographs

Note: *EB-24*

Note: *Back Anchorage*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 005

Equipment ID No. *EB-24* Equip. Class[1] *1 - MOTOR CONTROL CENTERS AND WALL-MOUNTED CONTACTORS*

Equipment Description *480 VOLT MOTOR CONTROL CENTER #24*

Note: *Front Anchorage*

Note: *Nearby Concrete Column*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 006

Equipment ID No. *EB-11* Equip. Class[1] *2 - LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CENTER BUS NO.11*

Location: Bldg. *AUX* Floor El. *607* Room, Area *224*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The anchorage consists of a single bolt in the center of each cubicle on the front and back as well as welds along the front side between the cubicle and an embed plate in the concrete.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   There is no corrosion.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The cabinet is anchored directly into the concrete pedestal that is about 5" high as well as welded to a plate embedded in the top of the pedestal.
   There are hairline cracks in the pedestal of no structural consequence.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 006

Equipment ID No. *EB-11* Equip. Class[1] *2 - LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CENTER BUS NO.11*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   Anchorage was verified with EA-POC0007899-SEWS-EB11 and C-103 Sheet 0.

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐
   There is no gap between EB-11 and EX-11, therefore there is no possibility for seismic interaction issues between the two components.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   There are well supported lights overhead. The light bulbs could fall from these lights but would have negligible effects on the equipment.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
   There are only flexible cables extending from equipment.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 006

Equipment ID No. *EB-11* Equip. Class[1] *2 - LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CENTER BUS NO.11*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-17-2012*

Paul Klein *10-17-2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 006

Equipment ID No. *EB-11* Equip. Class[1] *2 - LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CENTER BUS NO.11*

Photographs

Note: *EB-11 with door open*

Note: *Front Anchorage*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 006

Equipment ID No. *EB-11* Equip. Class[1] *2 - LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CENTER BUS NO.11*

Note: *Back Anchorage*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 007

Equipment ID No. *EB-12* Equip. Class[1] *2 - LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480VOLT LOAD CENTER BUS NO. 12*

Location: Bldg. *AUX* Floor El. *607* Room, Area *224*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The anchorage consists of a single bolt in the center of each cubicle on the front and back as well as welds along the front side between the cubicle and an embed plate in the concrete.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   There is no corrosion.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The cabinet is anchored directly into the concrete pedestal that is about 5" high as well as welded to a plate embedded in the top of the pedestal.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 007

Equipment ID No. *EB-12* Equip. Class[1] *2 - LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480VOLT LOAD CENTER BUS NO. 12*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐
There is no gap between EB-12 and EX-12, therefore there is no possibility for seismic interaction issues between the two components.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
There are well supported lights overhead. The light bulbs could fall from these lights but would have negligible effects on the equipment.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
There are only flexible cables extending from equipment.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 007

Equipment ID No. *EB-12* Equip. Class[1] *2 - LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480VOLT LOAD CENTER BUS NO. 12*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-17-2012*

Paul Klein *10-17-2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 007

Equipment ID No. *EB-12* Equip. Class[1] *2 - LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480VOLT LOAD CENTER BUS NO. 12*

Photographs

Note: *EB-12*

Note: *Anchorage*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 008

Equipment ID No. *EB-19* Equip. Class[1] *2, LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CONTROL CENTER NO.19*

Location: Bldg. *AUX* Floor El. *607* Room, Area *725*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The equipment consists of cabinets that are welded at the base to a channel that is embedded to a concrete pedestal. The weld configuration consists of intermittent fillet welds along both sides of the cabinet base.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   The welds are coated with a zinc spray.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The cabinets are mounted on a concrete pedestal that sits atop the concrete floor. There is minor surface cracking noted in the floor adjacent to the pedestal.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 008

Equipment ID No. *EB-19* Equip. Class[1] *2, LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CONTROL CENTER NO.19*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   The anchorage configuration is consistent with SEWS Shts. 1 through 12 for the welds along the base of the cabinets. The anchor bolts are not visible since they are embedded in the concrete pad under the channel.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   Fluorescent light fixtures overhead. Light fixtures hanging from chains with S hooks. Light fixtures judged not to come off S hooks due to vertical seismic acceleration < 1.0g. Fluorescent bulb is not a significant interaction since the bulb has a very small mass.
9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
   Flexible cable is fed through the top of the cabinets.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 008

Equipment ID No. *EB-19* Equip. Class[1] *2, LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CONTROL CENTER NO.19*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

The back of the equipment (east side) does not have doors with hinges that are easily accessible and normally opened. These doors have two handles on either side and require personnel to lift the door off the cabinet. Inspection of the back of the equipment is determined inaccessible.

Evaluated by: *Kevin Bessell* Date: *10/17/2012*

John Kao *10/17/2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 008

Equipment ID No. *EB-19* Equip. Class[1] *2, LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CONTROL CENTER NO.19*

Photographs

Note: *Front panels of equipment.*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 009

Equipment ID No. *EB-20* Equip. Class[1] *2, LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CONTROL CENTER NO. 20*

Location: Bldg. *AUX* Floor El. *607* Room, Area *725*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The equipment consists of cabinets that are welded at the base to a channel that is embedded to a concrete pedestal. The weld configuration consists of intermittent fillet welds along both sides of the cabinet base.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   The welds are coated with a zinc spray.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The cabinets are mounted on a concrete pedestal that sits atop the concrete floor. There is minor surface cracking noted in the floor adjacent to the pedestal.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 SEISMIC WALKDOWN CHECKLIST FORM

Sheet 2 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 009

Equipment ID No. *EB-20* Equip. Class[1] *2, LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CONTROL CENTER NO. 20*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   Fluorescent light fixtures overhead. Light fixtures hanging from chains with S hooks. Light fixtures judged not to come off S hooks due to vertical seismic acceleration < 1.0g. Fluorescent bulb is not a significant interaction since the bulb has a very small mass.
   The bottom of overhead conduit, X8110, is approximately 3/4" from the top of the cabinet. The cables from this conduit are fed through the top of the equipment and the conduit is supported at two points near the cabinet. Interaction with this conduit and the cabinet is judged not to be credible.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
   Flexible cable is fed through the top of the cabinets.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 009

Equipment ID No. *EB-20* Equip. Class[1] *2, LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CONTROL CENTER NO. 20*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

The back of the equipment (west side) does not have doors with hinges that are easily accessible and normally opened. These doors have two handles on either side and require personnel to lift the door off the cabinet. Inspection of the back of the equipment is determined inaccessible.

Evaluated by: *Kevin Bessell* Date: *10/17/2012*

John Kao *10/17/2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 009

Equipment ID No. *EB-20* Equip. Class[1] *2, LOW VOLTAGE SWITCHGEAR AND BREAKER PANELS*

Equipment Description *480 VOLT LOAD CONTROL CENTER NO. 20*

Photographs

Note: *Front of equipment.*

Note: *Overhead conduit, X8110, located in close proximity to the top of the equipment.*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 012

Equipment ID No. *EX-11* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO.11*

Location: Bldg. *AUX* Floor El. *607* Room, Area *224*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   There are 10 L-shaped plate sections that are cast in a concrete pedestal. The vertical legs project 3" out of the pedestal.The vertical legs of these plates above the pedestal are welded to the sides of the transformer.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   The plates and welds are completely painted.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   There are hairline cracks of no structural consequence in the 5" pedestal that supports the transformer.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 012

Equipment ID No. *EX-11* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO.11*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   The anchorage was verified with Drawing C-103 Sheet 1.

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☐ N☐ U☐ N/A☒
   The transformer is not a soft target.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   There is an overhead cable tray that is well supported.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
   Its one visible line has elbows for flexibility.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 012

Equipment ID No. *EX-11* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO.11*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-17-2012*

Paul Klein *10-17-2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

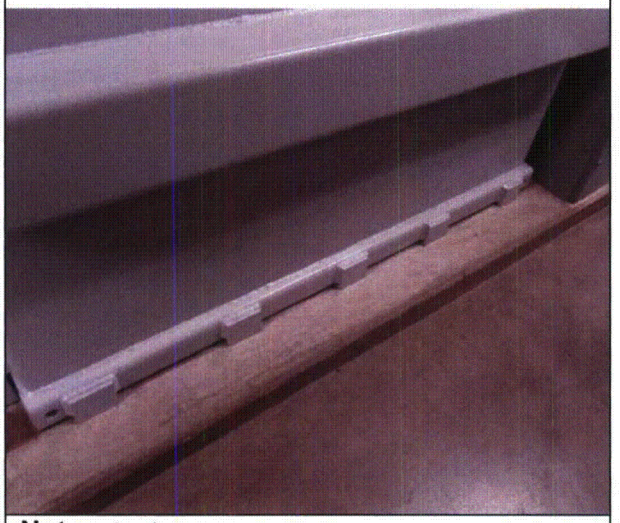
Seismic Walkdown Checklist (SWC) SWEL1- 012

Equipment ID No. *EX-11* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO.11*

Photographs

Note: *EX-11*



Note: *Anchorage*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 012

Equipment ID No. *EX-11* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO.11*

Note: *Weld Close Up*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 013

Equipment ID No. *EX-12* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO. 12*

Location: Bldg. *AUX* Floor El. *607* Room, Area *224*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   There are 10 L-shaped plate sections that are cast in a concrete pedestal. The vertical legs project 3" out of the pedestal. The vertical legs of these plates above the pedestal are welded to the sides of the transformer.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   The plates and welds are completely painted.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   There are hairline cracks of no structural consequence in the 5" pedestal that supports the transformer.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 013

Equipment ID No. *EX-12* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO. 12*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☐ N☐ U☐ N/A☒
The transformer is not a soft target.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
There is an overhead cable tray that is well supported.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
Its one visible line has elbows for flexibility.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 013

Equipment ID No. *EX-12* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO. 12*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-17-2012*

Paul Klein *10-17-2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

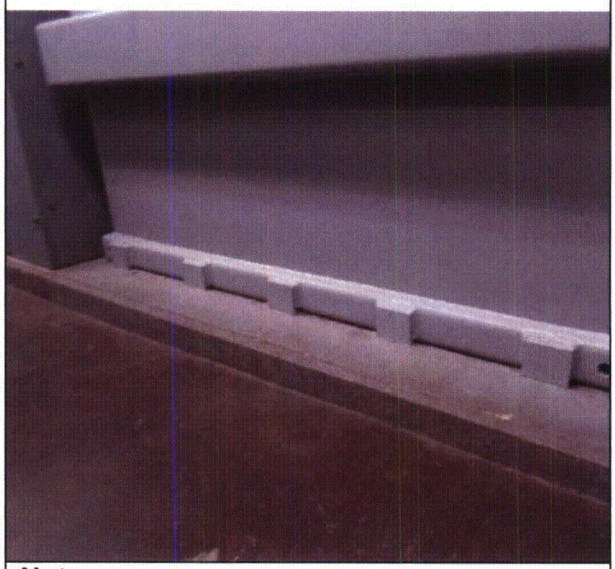
Seismic Walkdown Checklist (SWC) SWEL1- 013

Equipment ID No. *EX-12* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO. 12*

Photographs

Note: *EX-12*



Note: *Anchorage*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

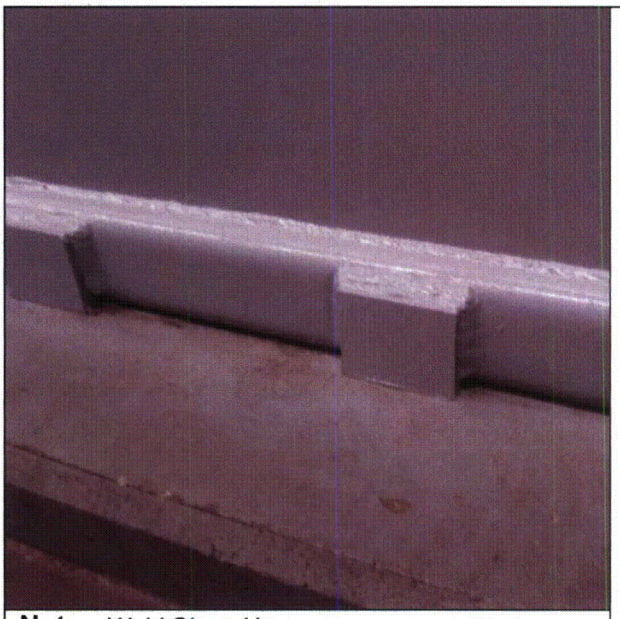
Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 013

Equipment ID No. *EX-12* Equip. Class[1] *4 - TRANSFORMERS*

Equipment Description *STATION POWER TRANSFORMER NO. 12*



Note: *Weld Close Up*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 014

Equipment ID No. *EX-19* Equip. Class[1] *4, TRANSFORMERS*

Equipment Description *STATION POEWR TRANSFORMER #19*

Location: Bldg. *AUX* Floor El. *607* Room, Area *725*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The equipment consists of cabinets that are mounted on a skid that is welded to a channel that is embedded to a concrete pedestal. The weld configuration consists of intermittent fillet welds along both sides of the skid.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   The welds are coated with a zinc spray.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The cabinets are mounted on a concrete pedestal that sits atop the concrete floor. No cracks observed.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 SEISMIC WALKDOWN CHECKLIST FORM

Sheet 2 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 014

Equipment ID No. *EX-19* Equip. Class[1] *4, TRANSFORMERS*

Equipment Description *STATION POEWR TRANSFORMER #19*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☒ N/A☐
   Fluorescent light fixtures overhead. Light fixtures hanging from chains with S hooks. Light fixtures judged not to come off S hooks due to vertical seismic acceleration < 1.0g. Fluorescent bulb is not a significant interaction since the bulb has a very small mass.
   Security panels are mounted to the north wall and are mounted over the equipment. The panels are well anchored and not a concern.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
   Flexible cable is fed through the top of the cabinets.

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 014

Equipment ID No. *EX-19* Equip. Class[1] *4, TRANSFORMERS*

Equipment Description *STATION POEWR TRANSFORMER #19*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Kevin Bessell* Kevin Bessell Date: *10/17/2012*

John Kao John Kao *10/17/2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 014

Equipment ID No. *EX-19* Equip. Class[1] *4, TRANSFORMERS*

Equipment Description *STATION POEWR TRANSFORMER #19*

Photographs

Note: *Front side of equipment.*

Note: *Anchorage of equipment.*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 015

Equipment ID No. *EX-20* Equip. Class[1] *4, TRANSFORMERS*

Equipment Description *STATION POWER TRANFORMER #20*

Location: Bldg. *AUX* Floor El. *607* Room, Area *725*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The equipment consists of cabinets that are mounted on a skid that is welded to a channel that is embedded to a concrete pedestal. The weld configuration consists of intermittent fillet welds along both sides of the skid.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   The welds are coated with a zinc spray.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The cabinets are mounted on a concrete pedestal that sits atop the concrete floor. No cracks observed.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 015

Equipment ID No. *EX-20* Equip. Class[1] *4, TRANSFORMERS*

Equipment Description *STATION POWER TRANFORMER #20*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   The anchorage configuration is consistent with SEWS Shts. 1 through 12 for the welds along the base of the cabinets. The anchor bolts are not visible since they are embedded in the concrete pad under the channel.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   Fluorescent light fixtures overhead. Light fixtures hanging from chains with S hooks. Light fixtures judged not to come off S hooks due to vertical seismic acceleration < 1.0g. Fluorescent bulb is not a significant interaction since the bulb has a very small mass.
   Security transformers are mounted to the north wall and are mounted over the equipment. The transformers are well anchored and not a concern.
9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
   Flexible cable is fed through the top of the cabinets.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 015

Equipment ID No. *EX-20* Equip. Class[1] *4, TRANSFORMERS*

Equipment Description *STATION POWER TRANFORMER #20*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Kevin Bessell* Kevin Bessell Date: *10/17/2012*

John Kao John Kao *10/17/2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 4

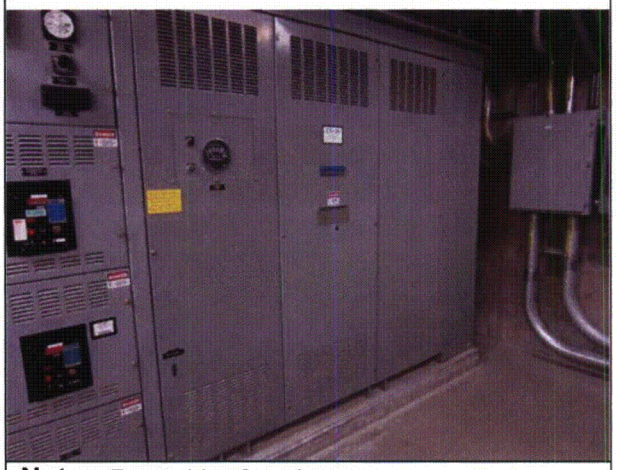
Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 015

Equipment ID No. *EX-20* Equip. Class[1] *4, TRANSFORMERS*

Equipment Description *STATION POWER TRANFORMER #20*

Photographs



Note: *Front side of equipment.*

Note: *Anchorage of equipment.*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 016

Equipment ID No. *P-52B* Equip. Class[1] *5 -HORIZONTAL PUMPS*

Equipment Description *COMPONENT COOLING WATER PUMP*

Location: Bldg. *AUX* Floor El. *590* Room, Area *123*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The pump is bolted to the skid. The skid is bolted to the concrete pedestal with 8 bolts. The pedestal is attached to the floor slab.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   There was no corrosion as the bolts were painted.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   There are 2 minor (~1/2") chips in the concrete pedestal that do not appear to undermine any of the anchorage or reinforcement. The pedestal is approximately 5 inches tall.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 016

Equipment ID No. *P-52B* Equip. Class[1] *5 -HORIZONTAL PUMPS*

Equipment Description *COMPONENT COOLING WATER PUMP*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☐ N☐ U☐ N/A☒
The pump is not a soft target.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
There is a crane beam overhead that is well supported.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 016

Equipment ID No. *P-52B* Equip. Class[1] *5 -HORIZONTAL PUMPS*

Equipment Description *COMPONENT COOLING WATER PUMP*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-12-2012*

Paul Klein *10-12-2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

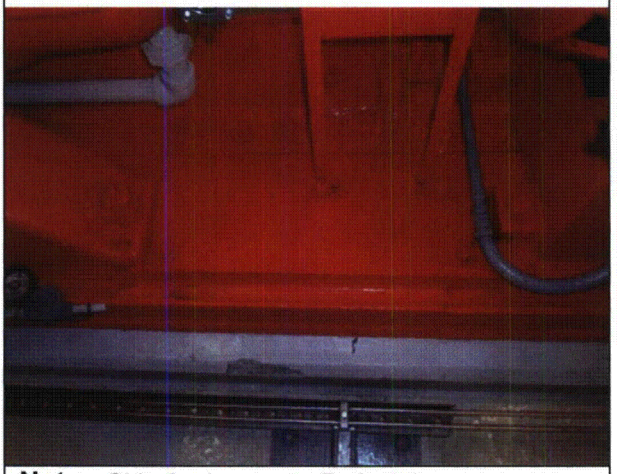
Seismic Walkdown Checklist (SWC) SWEL1- 016

Equipment ID No. *P-52B* Equip. Class[1] *5 -HORIZONTAL PUMPS*

Equipment Description *COMPONENT COOLING WATER PUMP*

Photographs

Note: *P-52B*



Note: *Side Anchorage to Pedestal*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

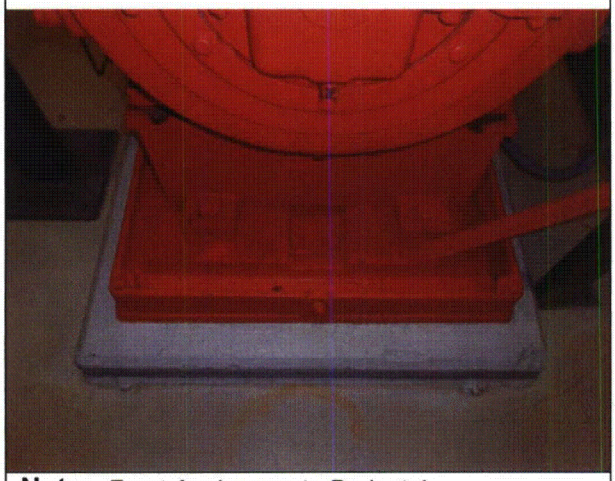
Sheet 5 of 5

Status: Y☒ N☐ U☐

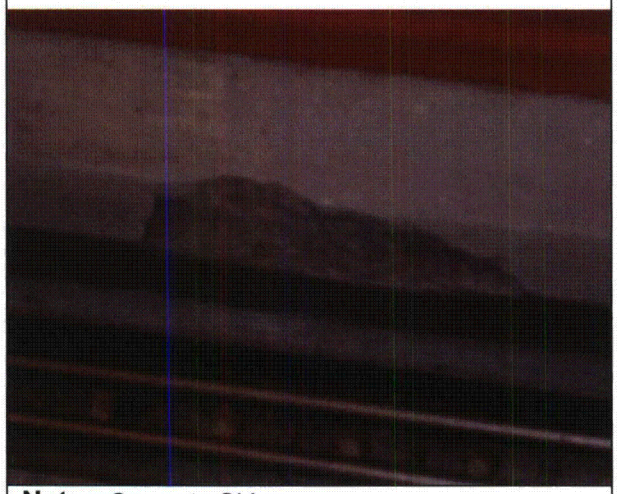
Seismic Walkdown Checklist (SWC) SWEL1- 016

Equipment ID No. *P-52B* Equip. Class[1] *5 -HORIZONTAL PUMPS*

Equipment Description *COMPONENT COOLING WATER PUMP*



Note: *Front Anchorage to Pedestal*



Note: *Concrete Chip*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 017

Equipment ID No. *P-54C* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *CONTAINMENT SPRAY PUMP*

Location: Bldg. *AUX* Floor El. *570* Room, Area *005*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The anchorage consists of 6 anchor bolts connecting the pump skid to a concrete pad.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   The anchorage is completely painted and therefore showed no rust.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The pump skid was anchored to a ~1" pad directly on the concrete floor slab.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 017

Equipment ID No. *P-54C* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *CONTAINMENT SPRAY PUMP*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   The anchorage configuration check was performed using Drawing M-8/950 Y-11 Sheets 1-7 and found to be in compliance with the configuration drawings.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☐ N☐ U☐ N/A☒
   The pump is not a soft target.
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   There was a light in the overhead directly above the pump that was swaying due to room HVAC and was judged not to be a concern.
9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 017

Equipment ID No. *P-54C* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *CONTAINMENT SPRAY PUMP*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10/09/2012*

Paul Klein *10/09/2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 4

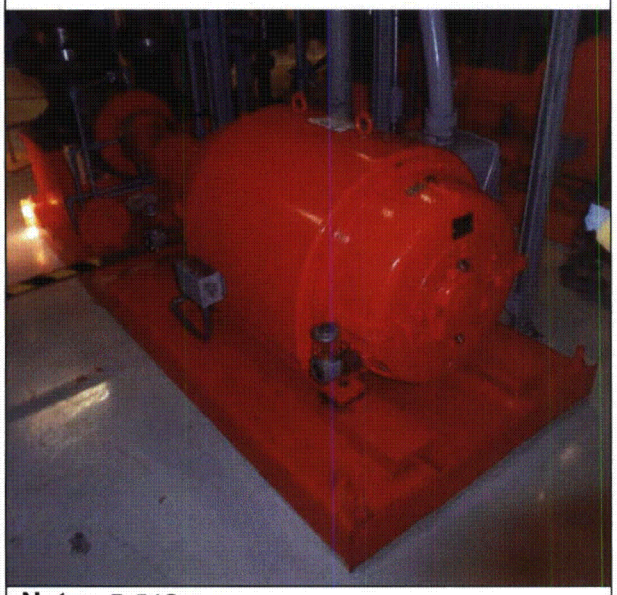
Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 017

Equipment ID No. *P-54C* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *CONTAINMENT SPRAY PUMP*

Photographs



Note: *P-54C*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 018

Equipment ID No. *P-67B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *LOW PRESSURE SAFETY INJECTION PUMP*

Location: Bldg. *AUX* Floor El. *570* Room, Area *005*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The anchorage consists of 6 approximately 7/8" bolts connecting the pump skid to a ~1" concrete pedestal. Two of the bolts lack full thread engagement (West Center bolt and Southeast bolt [see photos]). These bolts lack approximately 2 threads of engagement at most for each bolt. Due to the fact that well over two-thirds of the nut has engagement with the bolt, the bolt strength would not be limited by thread failure and instead limited by direct tensile failure of the cross-section of the bolt itself. This shows that even though these bolts do not have full engagement the capacity is not limited and therefore these are not deemed a concern. LB-22 has been initiated to follow up. CR-PLP-2012-7271 has been initiated.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   Bolts are painted and show no signs of corrosion.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 018

Equipment ID No. *P-67B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *LOW PRESSURE SAFETY INJECTION PUMP*

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The pump skid is anchored to a ~1" concrete pedestal on the floor slab.

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☐ N☐ U☐ N/A☒
   The pump is not a soft target.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 018

Equipment ID No. *P-67B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *LOW PRESSURE SAFETY INJECTION PUMP*

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10/19/2012*

Paul Klein *10/19/2012*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

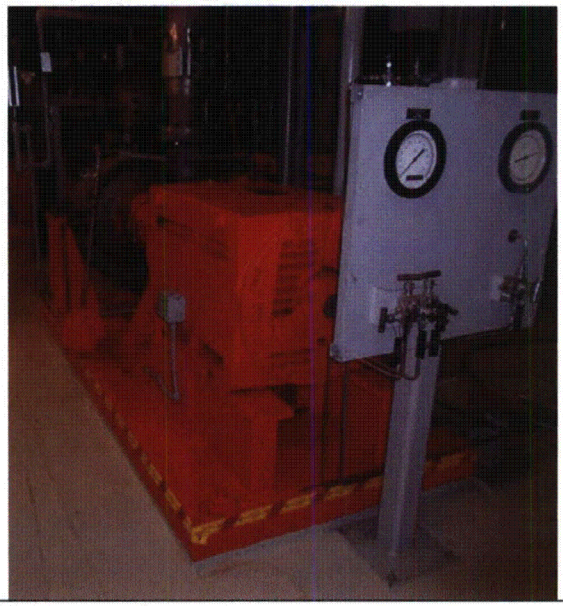
Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 018

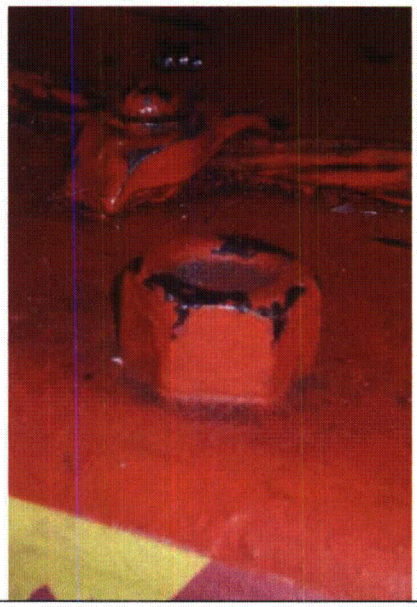
Equipment ID No. *P-67B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *LOW PRESSURE SAFETY INJECTION PUMP*

Photographs



Note: *P-67B*



Note: *Lack of Thread Engagement (West Center Bolt)*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 018

Equipment ID No. *P-67B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *LOW PRESSURE SAFETY INJECTION PUMP*

Note: *Lack of Thread Engagement (Southwest Bolt)*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 019

Equipment ID No. *P-8A* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *MOTOR DRIVEN AUXILIARY FEEDWATER PUMP*

Location: Bldg. *TURB* Floor El. *571* Room, Area *007*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   Pump and motor are bolted to supports welded to the pump base and the base is grouted and bolted to the concrete with 6 bolts.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   The surface of the concrete anchors is painted.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   The concrete housekeeping ~9" pad and floor are painted. Some paint was chipping. No concrete cracks were observed.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 019

Equipment ID No. *P-8A* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *MOTOR DRIVEN AUXILIARY FEEDWATER PUMP*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   P-8A concrete anchorage compared with Palisades SEWS Evaluation No. EA-POC0007899-SEWS-P8A.

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☒ N☐ U☐ N/A☐
   The pump is not a soft target.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   The monorail runway beam above pump P-8A is well supported. The ductwork is rod supported. The fluorescent light fixtures are chain supported.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 019

Equipment ID No. *P-8A* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *MOTOR DRIVEN AUXILIARY FEEDWATER PUMP*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-12-12*

Paul Klein *10-12-12*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

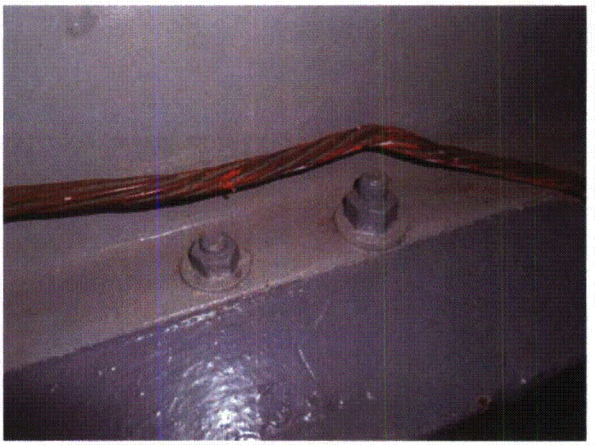
Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 019

Equipment ID No. *P-8A* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *MOTOR DRIVEN AUXILIARY FEEDWATER PUMP*

Photographs

This photo contains security-sensitive information. It is available for review at the Palisades Nuclear Plant.	
Note: *P-8A*	**Note:** *P-8A Base Anchor Bolts. (The larger bolt is the anchor bolt. The smaller bolt is the leveling bolt.)*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

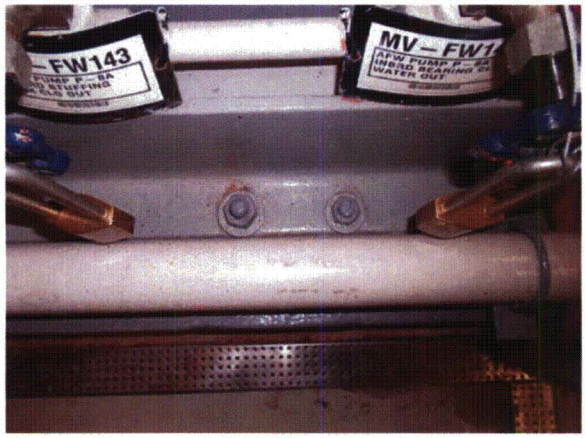
Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 019

Equipment ID No. *P-8A* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *MOTOR DRIVEN AUXILIARY FEEDWATER PUMP*



Note: *P-8A Base Anchor Bolts. (The larger bolt is the anchor bolt. The smaller bolt is the leveling bolt.)*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 020

Equipment ID No. *P-8B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *STEAM DRIVEN AUXILIARY FEEDWATER PUMP*

Location: Bldg. *TURB* Floor El. *571* Room, Area *007*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The pump and motor are bolted to supports that are welded to the pump base and the base is bolted to the concrete with 6 bolts.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   The exposed portion of the concrete anchors is painted.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   No concrete cracks were observed in the proximity of the anchors.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 020

Equipment ID No. *P-8B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *STEAM DRIVEN AUXILIARY FEEDWATER PUMP*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☐ N☐ U☐ N/A☒
   The pump is not a soft target.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   The monorail runway beam above pump P-8B is well supported. The ductwork is rod supported. The fluorescent light fixtures are chain supported.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 020

Equipment ID No. *P-8B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *STEAM DRIVEN AUXILIARY FEEDWATER PUMP*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-12-12*

Paul Klein *10-12-12*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 020

Equipment ID No. *P-8B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *STEAM DRIVEN AUXILIARY FEEDWATER PUMP*

Photographs

This photo contains security-sensitive information. It is available for review at the Palisades Nuclear Plant.	
Note: *P-8B*	**Note:** *P-8B Base Anchor Bolts. (The larger bolt is the anchor bolt. The smaller bolt is the leveling bolt.*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

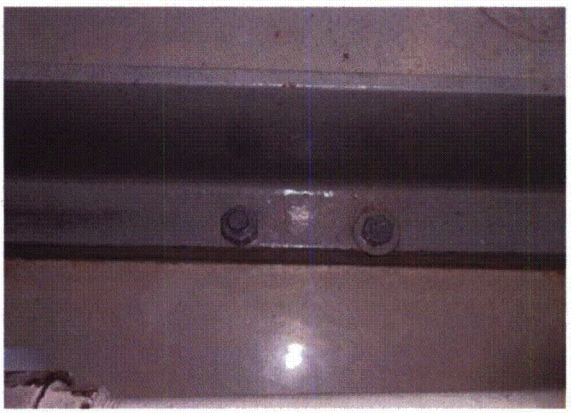
Sheet 5 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 020

Equipment ID No. *P-8B* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *STEAM DRIVEN AUXILIARY FEEDWATER PUMP*



Note: *P-8B Base Anchor Bolts. (The larger bolt is the anchor bolt. The smaller bolt is the leveling bolt.)*

Note:

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1-021

Equipment ID No. *P-8C* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *MOTOR DRIVEN AUXILIARY FEEDWATER PUMP*

Location: Bldg. *AUX* Floor El. *570* Room, Area *005*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   Anchorage consists of 6 anchors attaching pump skid to ~1 inch concrete pad.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   Anchors are painted and no corrosion is apparent.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   Skid rests on ~1" concrete pad fixed to floor slab.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1-021

Equipment ID No. *P-8C* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *MOTOR DRIVEN AUXILIARY FEEDWATER PUMP*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   Anchorage was verified with VEN-M1-G(A) Sheet 131 and the SEWS package for P-8C.

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☐ N☐ U☐ N/A☒
   Pump is not considered a soft target.

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   Overhead hanging rod from a spring can is bent around insulation of nearby HP Pump Suction pipe (Near line support HC3-H178.1 [see photo)].Hanger rod is at minimum 3/8" and the supported pipe is approximately at elevation 585. Due to the fact that spring can supports are not considered in seismic analysis, this condition is judged to not be a potentially adverse seismic condition.

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1-021

Equipment ID No. *P-8C* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *MOTOR DRIVEN AUXILIARY FEEDWATER PUMP*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10/09/2012*

Paul Klein *10/09/2012*

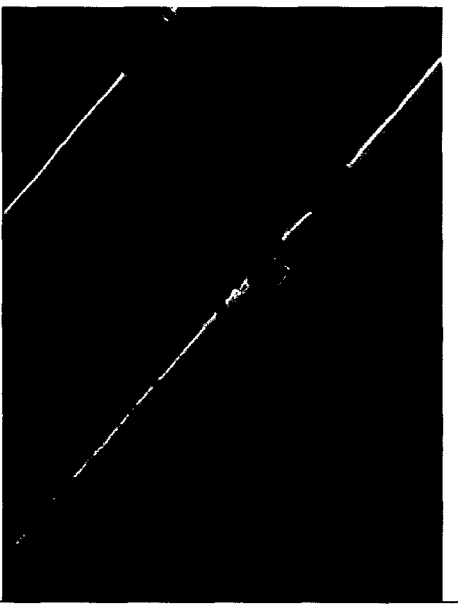
Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1-021

Equipment ID No. *P-8C* Equip. Class[1] *5 - HORIZONTAL PUMPS*

Equipment Description *MOTOR DRIVEN AUXILIARY FEEDWATER PUMP*

Photographs

This photo contains security-sensitive information. It is available for review at the Palisades Nuclear Plant.	
Note: *P-8C*	**Note:** *Bent Hanger Rod from Spring Can Over Pump.*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 022

Equipment ID No. *P-7A* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

Location: Bldg. *TURB* Floor El. *590* Room, Area *136*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   Pump bolted to base plate with 8 bolts. The base plate is bolted to a concrete base with 4 cinch anchors. The top of the pump is supported with sq. steel tubing bolted to the wall with 6 concrete anchors and to the pump.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   Mild surface oxidation of the bolts connecting the pump to the base plate, the concrete anchors connecting the base plate to the concrete base supporting the pump, the base of the pump, and the base plate was noted. The mild corrosion noted does not result in a significant amount of material loss and is not considered an adverse condition. In addition, a thick coat of paint around the pumps appears to have been chipped away.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   No concrete cracks were observed in the concrete base supporting the pump and in the wall 8 ft. above the floor supporting the strut from the top of the pump.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 022

Equipment ID No. *P-7A* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   The anchorage was compared with Palisades Pump P-7A SEWS, Palisades Pump Configuration Dwg. VEN - M11 Shts. 27, 28, 29, 30, 31, and 40.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☐ N☐ U☐ N/A☒
   The pump is not a soft target.
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 022

Equipment ID No. *P-7A* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-12-12*

Paul Klein *10-12-12*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 5

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 022

Equipment ID No. *P-7A* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

Photographs

This photo contains security-sensitive information. It is available for review at the Palisades Nuclear Plant.	
Note: *Pump P-7A*	**Note:** *P-7A base showing mild corrosion and chipped paint coating.*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

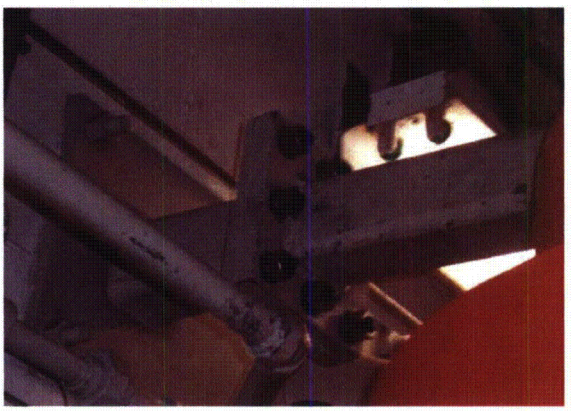
Sheet 5 of 5

Status: Y☒ N☐ U☐

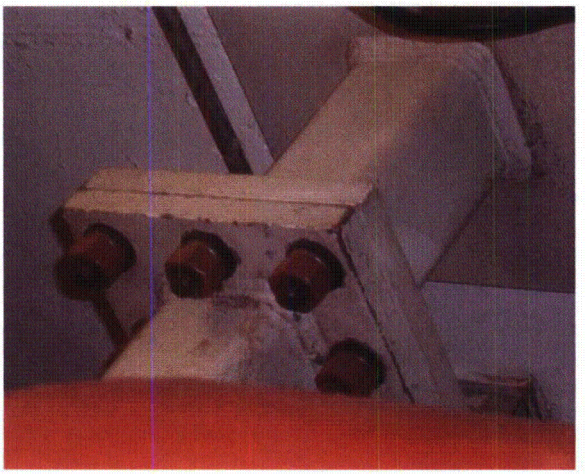
Seismic Walkdown Checklist (SWC) SWEL1- 022

Equipment ID No. *P-7A* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*



Note: *P-7A Strut from Pump to Wall at Top of Pump*



Note: *P-7A Strut from Pump to Wall at Top of Pump*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 023

Equipment ID No. *P-7B* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

Location: Bldg. *TURB* Floor El. *590* Room, Area *136*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☐ N☒

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   Pump bolted to base plate with 8 bolts. The base plate is bolted to the concrete base with 4 cinch anchors. The top of the pump is braced back to the wall with 2 steel sq. tube struts each welded to plates that are bolted to the wall with 6 concrete anchors.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   Mild surface oxidation of the bolts connecting the pump to the base plate, the concrete anchors connecting base plate to the concrete base supporting the pump, the base of the pump, and the base plate were noted.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   No cracks were observed in the concrete base supporting the pump and in the wall 8 ft. above the floor supporting the struts from the top of the pump.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 023

Equipment ID No. *P-7B* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☐ N☐ U☐ N/A☒

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? *The pump is not a soft target.* Y☐ N☐ U☐ N/A☒

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐

9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 023

Equipment ID No. *P-7B* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-12-12*

Paul Klein *10-12-12*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 4

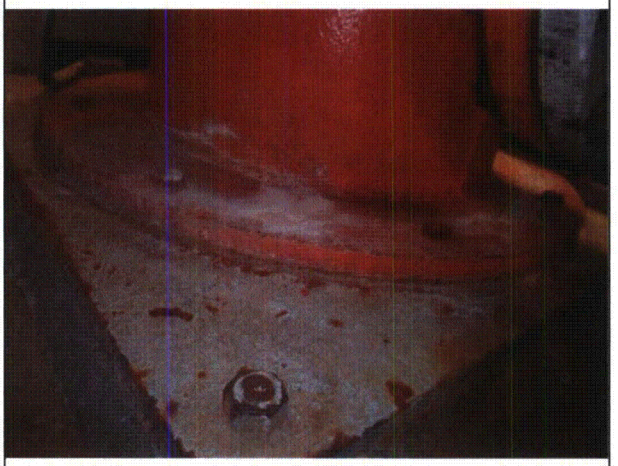
Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 023

Equipment ID No. *P-7B* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

Photographs

This photo contains security-sensitive information. It is available for review at the Palisades Nuclear Plant.	
Note: *Pump P-7B*	**Note:** *P-7B Base*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 1 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 024

Equipment ID No. *P-7C* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

Location: Bldg. *TURB* Floor El. *590* Room, Area *136*

Manufacturer, Model, Etc. (optional but recommended)

Instructions for Completing Checklist

This checklist may be used to document the results of the Seismic Walkdown of an item of equipment on the SWEL. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y☒ N☐

2. Is the anchorage free of bent, broken, missing or loose hardware? Y☒ N☐ U☐ N/A☐
   The pump is bolted to the base plate with 8 bolts. The base plate is bolted to the concrete base with 4 cinch anchors. The top of the pump is braced back to the wall with a steel sq. tube strut welded to a plate that is bolted to the wall with 6 concrete anchors.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y☒ N☐ U☐ N/A☐
   Mild surface oxidation of the bolts connecting the pump to the base plate, the concrete anchors connecting the base plate to the concrete base supporting the pump, the base of the pump, and the base plate was noted.

4. Is the anchorage free of visible cracks in the concrete near the anchors? Y☒ N☐ U☐ N/A☐
   No cracks were observed in the concrete base supporting the pump and in the wall at 8 ft. above the floor supporting the strut from the top of the pump.

[1] Enter the equipment class name from EPRI 1025286, Appendix B: Classes of Equipment.

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 2 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 024

Equipment ID No. *P-7C* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y☒ N☐ U☐ N/A☐
   The anchorage was compared with the description in Palisades Pump P-7C SEWS and Palisades Pump Configuration Dwg. VEN – M11 Shts. 27, 28, 29, 30, and 40.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y☒ N☐ U☐

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y☐ N☐ U☐ N/A☒
   The pump is not a soft target.
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Y☒ N☐ U☐ N/A☐
   The monorail hoist chain gathering bag is supported from the hoist with a closed hook and is not a concern.
9. Do attached lines have adequate flexibility to avoid damage? Y☒ N☐ U☐ N/A☐
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y☒ N☐ U☐

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 3 of 4

Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 024

Equipment ID No. *P-7C* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment? Y☒ N☐ U☐

Comments (Additional pages may be added as necessary)

Evaluated by: *Alex Smerch* Date: *10-12-12*

Paul Klein *10-12-12*

ATTACHMENT 9.6 **SEISMIC WALKDOWN CHECKLIST FORM**

Sheet 4 of 4

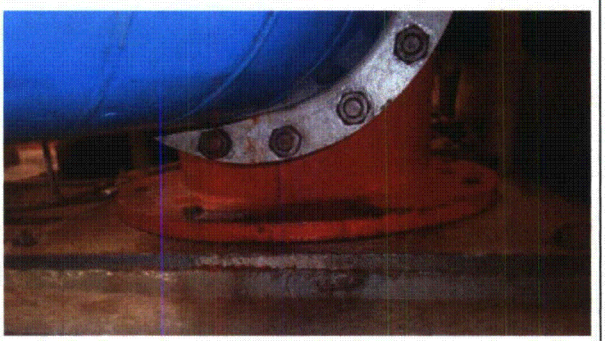
Status: Y☒ N☐ U☐

Seismic Walkdown Checklist (SWC) SWEL1- 024

Equipment ID No. *P-7C* Equip. Class[1] *6 - VERTICAL PUMPS*

Equipment Description *SERVICE WATER PUMP*

Photographs

This photo contains security-sensitive information. It is available for review at the Palisades Nuclear Plant.	
Note: *Pump P-7C*	**Note:** *P-7C Base Connection*