

SEISMIC WALKDOWN REPORT (REV. 2)

**IN RESPONSE TO THE 50.54(f) INFORMATION REQUEST
REGARDING
FUKUSHIMA NEAR-TERM TASK FORCE RECOMMENDATION 2.3:
SEISMIC**

For

**TURKEY POINT UNIT 4
NRC Docket No. 50-251**

Florida Power & Light Company
Turkey Point Nuclear Plant
9760 SW 344th Street
Florida City, FL 33035

Submittal Date: June 2013

	<u>Name & Title</u>	<u>Affiliation</u>	<u>Signature</u>	<u>Date</u>
Preparer:	Carlos Andres Figueroa Design Engineer	FPL		<u>07/09/13</u>
Approver:	Eric Ballon Engineering Supervisor	FPL		<u>07/09/13</u>
Site Sponsor:	Sergio Chaviano Special Projects Manager, Site Fukushima Lead	FPL		<u>07/09/13</u>

Contents

List of Tables	iii
Executive Summary.....	iv
1 Introduction	1
1.1 Background.....	1
1.2 Plant Overview.....	1
1.3 Approach.....	1
2 Seismic Licensing Basis.....	2
2.1 Site Seismicity.....	2
2.2 Seismic Design Basis.....	2
2.3 USI A-46 and Seismic IPEEE.....	3
3 Personnel Qualifications.....	5
3.1 Overview.....	5
3.2 Project Personnel.....	5
3.3 Equipment Selection Personnel.....	5
3.4 Seismic Walkdown Engineers.....	6
3.5 Licensing Basis Reviewers.....	6
3.6 IPEEE Reviewers.....	6
3.7 Peer Review Team.....	6
3.8 Additional Personnel.....	6
4 Selection of SSCs.....	7
5 Seismic Walkdowns and Area Walk-Bys	11
5.1 Overview.....	11
5.2 Seismic Walkdowns.....	11
5.3 Area Walk-Bys.....	30

6	<i>Licensing Basis Evaluations</i>	35
7	<i>IPEEE Vulnerabilities Resolution Report.....</i>	36
8	<i>Peer Review Report.....</i>	40
9	<i>References</i>	41
A	<i>Project Personnel Resumes and SWE Certificates.....</i>	42
	A.1 Introduction	42
	A.2 Resumes.....	42
	A.3 Certificates	44
B	<i>SWEL Selection Report.....</i>	47
C	<i>Seismic Walkdown Checklists (SWCs).....</i>	53
D	<i>Area Walk-By Checklists (AWCs).....</i>	88
E	<i>Plan for Future Seismic Walkdown of Inaccessible Equipment.....</i>	111
F	<i>Peer Review Report.....</i>	114
	1. Introduction.....	115
	2. Background	115
	4. Peer Review – Selection of Components for SWEL.....	120
	5. Peer Review – Seismic Walkdown.....	121
	6. Review Final Submittal Report & Sign-off	122
	7. References	122
	Attachment 1: Peer Review Checklist.....	124

List of Tables

Table 3-1: Personnel Roles.....	5
Table 4-1: Master Component List (SWEL 01)	7
Table 4-2: Master Component List – Deferred Containment Items (SWEL 01).....	10
Table 4-3: Master Component List (SWEL 02)	10
Table 5-1: Anchorage Configuration Confirmation	13
Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection.....	16
Table 5-3: Table of Actions Resulting from Area Walk-by Inspections.....	33

Executive Summary

The purpose of this report is to provide information as requested by the Nuclear Regulatory Commission (NRC) in its March 12, 2012 letter issued to all power reactor licensees and holders of construction permits in active or deferred status. (Ref. 12) In particular, this report provides information requested to address Enclosure 3, Recommendation 2.3: Seismic, of the March 12, 2012 letter. (Ref. 12)

The 50.54(f) letter requires, in part, all U.S. nuclear power plants to perform seismic walkdowns to verify the current plant configuration is within the current seismic licensing basis and identify and address degraded, non-conforming or unanalyzed conditions found. This report documents the seismic walkdowns performed at Turkey Point Unit 4 in response, in part, to the 50.54(f) letter issued by the NRC.

The Nuclear Energy Institute (NEI), supported by industry personnel, cooperated with the NRC to prepare guidance for conducting seismic walkdowns as required in the 50.54(f) letter, Enclosure 3, Recommendation 2.3: Seismic. (Ref. 12). The guidelines and procedures prepared by NEI and endorsed by the NRC were published through the Electric Power Research Institute (EPRI) as EPRI Technical Report 1025286, Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic, dated June 2012; henceforth, referred to as the "EPRI guidance document." (Ref. 1) Turkey Point has utilized this NRC endorsed guidance as the basis for the seismic walkdowns and this report. (Ref. 1)

The EPRI guidance document was used to perform the engineering walkdowns and evaluations described in this report. In accordance with the EPRI guidance document, the following topics are addressed in the subsequent sections of this report.

- Seismic Licensing Basis
- Personnel Qualifications
- Selection of Systems, Structures, and Components (SSC)
- Seismic Walkdowns and Area Walk-Bys
- Seismic Licensing Basis Evaluations
- IPEEE Vulnerabilities Resolution Report
- Peer Review

Revision 2 of this report has been issued to document the results from the Follow-on activities addressing the requirements per Enclosure 3 of the 50.54(f) letter to include inspection of items deferred due to inaccessibility along with supplemental inspections of electrical cabinets. Area Walk-Bys have been also complete, as required, during these follow-on activities. In addition, the SWEL is provided based on feedback that was received in industry forums.

Seismic Licensing Basis

The safe shutdown earthquake for the Turkey Point site is 0.15g horizontal ground acceleration and 0.10 g vertical ground acceleration. (Ref. 2, Section 2)

Personnel Qualifications

The walkdown team consisted of experienced site personnel with Civil/Structural or Mechanical Engineering, Operations and PRA backgrounds. The site personnel were supplemented by two vendors with significant experience in the area of seismic design and the performance of seismic walkdowns. The personnel who performed the key activities required fulfilling the objectives and requirements of the 50.54(f) letter are qualified and trained as required in the EPRI guidance document (Ref. 1).

Selection of SSCs

Ninety-eight (98) components were selected for the walkdown effort, including spent fuel pool items. These components were selected using the process described in detail in the EPRI guidance document, Section 3: Selection of SSCs. (Ref. 1)

Seismic Walkdowns and Area Walk-Bys

Section 5, Appendix C, and Appendix D of this report documents the equipment Seismic Walkdowns and the Area Walk-Bys. The online seismic walkdowns for Turkey Point Unit 4 were performed September 17-21, 2012. The supplemental seismic walkdowns for deferred/inaccessible Items identified in Revision 1 of this Report, were performed in February and May 2013. The walkdown team consisted of two 2-person Seismic Walkdown Engineer (SWE) teams.

During the initial seismic walkdowns, the team inspected 88 of the 98 components on the seismic walkdown equipment list (comprised of SWEL 1 and SWEL 2). Ten components were inaccessible and future walkdowns were planned for these items. Follow-on inspections on electrical panels that could not be opened at the time of the initial walkdown were also performed during the supplemental seismic walkdown phase. CCW Surge Tank (4T218) was originally included in the SWEL. The tank is inaccessible due to deficiencies in the room access doors that require an extended period of time to repair. This was considered acceptable since this item is only one (1) out of thirteen (13) components of the same class (Tanks and/or Heat Exchangers) included in SWEL 1 and SWEL 2. This class is the second most populated among all the classes of equipment considered during the development of both SWELs. It is also noted that records indicate that the Unit 04 CCW Surge Tank was upgraded in 1991 to increase rigidity. An area Walk By inspection of the adjacent room (Unit 04 Spent Fuel Pit) was completed in 2012 with no issues identified.

Equipment Seismic Walkdowns included anchorage inspections and checks to verify as-found anchorages are consistent with design documents. The walkdown found cases where the as-found anchorage was not consistent with the design document. In other cases the document identifying anchorage design could not be identified. Instances of anchor corrosion were cited, but the extent of corrosion is not a seismic capacity concern at this time. Except for the item E16A air handling unit (AHU), no concerns with overall anchorage strength were identified. The E16A AHU was found to be lacking positive base anchorage. The operability of the unit was addressed and the unit was found to be operable.

Potential seismic interaction concerns were identified but none of the issues were considered to be hazards that rendered equipment inoperable. Other equipment interaction issues are related to clearances between equipment and adjacent items and improper seismic housekeeping. Loose or missing hardware, such as loose thumbscrews or latches, were found and cited under "Other" potentially adverse conditions.

Area Walk-Bys identified potentially adverse conditions relate to improper seismic housekeeping. Potential seismic interaction concerns were also identified but none of the issues were considered to be significant immediate hazards. In some cases during the initial seismic walkdowns, potential relay chatter due to bumping of equipment is cited. Potential relay chatter issue is undesirable but the overall plant hazard related to relay chatter is typically low. For the Turkey Point USI A-46 evaluation (Reference 9), relay chatter was dismissed as a concern. One potential seismically-induced spray hazard was cited as requiring evaluation. The evaluation determined that there was no significant hazard associated with the condition.

Seismic Licensing Basis Evaluations

Conditions identified during the walkdowns were documented on the Seismic Walkdown Checklists (SWCs) and the Area Walkdown Checklists (AWCs), and entered into the CAP. For those conditions that operability or functionality could not be screened as acceptable, evaluations were initiated to demonstrate that the current licensing basis was met. Tables 5-2 and 5-3 in the report provide a summary of the conditions and the actions taken.

IPEEE Vulnerabilities

In lieu of a full IPEEE seismic analysis, FPL opted to submit a "scaled back" program to resolve USI A-46 and Generic Letter 87-02 as allowed by the NRC in a letter dated November 4, 1998 (Ref. 13) issued for the review of Turkey Point IPEEE evaluations. The final results of this scaled back program for the A-46 program were submitted in a letter to the NRC, L-93-155, "Final Report of Plant Specific Seismic Adequacy Evaluation of Turkey Point Units 3 and 4 to Resolved USI A-46 and GL 87-02" (Ref. 14). The components selected for this analysis were also included in the SWEL in order to verify no outlier issues persisted.

Peer Reviews

The Peer Review of the walkdowns consisted of two teams made up of Operations and PRA representatives and engineers with knowledge and experience in seismic inspections and assessments. The engineers made up the SWE teams, but also served to peer review each other's work. The Operations and PRA representatives also participated in some of the walkdowns for logistical support as well as peer review. Appendix F of this report contains a summary of the Peer Review. The Peer Review determined that the objectives and requirements of the 50.54(f) letter are met. Further, it was concluded by the peer reviews that the efforts completed and documented within this report are in accordance with the EPRI guidance document.

Summary

In summary, all seismic walkdowns and the associated follow-on activities (Except the Unit 04 CCW Surge Tank (4T218) due to inaccessibility reasons) have been completed at Turkey Point Unit 4 in accordance with the NRC endorsed walkdown methodology. All potentially degraded, nonconforming, or unanalyzed conditions identified as a result of the seismic walkdowns have been entered into the corrective action program. None of the conditions found resulted in loss of operability or functionality of any structures, systems or components. Follow-on activities required to complete the efforts to address Enclosure 3 of the 50.54(f) letter include the inspection of items previously deferred due to inaccessibility along with supplemental inspections of electrical cabinets. Area Walk-Bys have also been completed, as required, during these follow-on activities.

1

Introduction

1.1 BACKGROUND

In response to Near-Term Task Force (NTTF) Recommendation 2.3, the Nuclear Regulatory Commission (NRC) issued a 10CFR50.54(10CFR50.54 (f) letter on March 12, 2012 requesting that all licensees perform seismic walkdowns to identify and address plant degraded, non-conforming, or unanalyzed conditions, with respect to the current seismic licensing basis. The Nuclear Energy Institute (NEI), through the Electric Power Research Institute (EPRI), prepared industry guidance to assist licensees in responding to this NRC request. The industry guidance document, EPRI Technical Report 1025286, *Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic*, dated June 2012 (Reference 1), was endorsed by the NRC on May 31, 2012. NextEra/Florida Power & Light Company (FPL) has committed to using this guidance as the basis for completing the walkdown effort.

1.2 PLANT OVERVIEW

The Turkey Point (PTN) site is located on the west shore of Biscayne Bay in Dade County, Florida. The site is 25 miles south of Miami and eight miles east of Florida City. The site contains two fossil units (Unit 1 and 2), two nuclear units (Units 3 and 4), and one combined cycle gas-powered unit (Unit 5). The plant's nuclear steam supply system (NSSS) was designed by Westinghouse Electric Corporation. The Containment structure and balance of plant was designed by Bechtel Corporation. The general description of the plant given above is based on the information in the UFSAR (Reference 2).

1.3 APPROACH

The EPRI Seismic Walkdown Guidance (Reference 1) was used for the seismic walkdowns and evaluations described in this report. In accordance with Reference 1, the following topics are addressed in the subsequent sections of this report:

- Seismic Licensing Basis
- Personnel Qualifications
- Selection of SSCs
- Seismic Walkdowns and Area Walk-Bys
- Licensing Basis Evaluations
- IPEEE Vulnerabilities Resolution Report
- Peer Review

2

Seismic Licensing Basis

2.1 SITE SEISMICITY

Site seismicity is discussed in UFSAR (Reference 2) Section 2. On the basis of historical or statistical seismic activity, Turkey Point is located in a seismically inactive area, far from any recorded damaging shocks. Even though several of the larger historical earthquakes may have been felt in southern Florida, the amount of ground motion caused by them was not great enough to cause damage to any moderately well-built structure.

Predicated on history, building codes, geologic conditions, and earthquake probability, the design earthquake was conservatively established as 0.05 g horizontal ground acceleration. The nuclear units have also been evaluated for a 0.15 g ground acceleration to assure no loss of function of the vital systems and structures. Vertical acceleration is taken as 2/3 of the horizontal value and is considered to act concurrently.

2.2 SEISMIC DESIGN BASIS

The seismic design was based on the acceleration ground response spectrum curves shown in UFSAR Figures 5A-1 and 5A-2. The curves were derived from the "Housner Spectrum" normalized to 0.05g for the design earthquake and 0.15g for the maximum earthquake. The UFSAR commitment for a maximum earthquake was determined at a time when probabilistic definition of seismic input had not been developed with any degree of consistency or confidence. Therefore, the 0.15g PGA was conservatively estimated based on very limited data available at the time.

The original design basis commits Turkey Point to the 1967 proposed version of General Design Criterion (GDC) Number 2 that relates to earthquake natural phenomena as identified below and is as follows:

"Those systems and components of reactor facilities which are essential to the prevention or to the mitigation of the consequences of nuclear accidents which could cause undue risk to the health and safety of the public shall be designed, fabricated, and erected to performance standards that will enable such systems and components to withstand, without undue risk to the health and safety of the public the forces that might reasonably be imposed by the occurrence of an extraordinary natural phenomenon such as earthquake, tornado, flooding condition, high wind or heavy ice. The design bases so established shall reflect: (a) appropriate consideration of the most severe of these natural phenomena that have been officially recorded for the site and the surrounding area and (b) an appropriate margin for withstanding forces greater than those recorded to reflect uncertainties about the historical data and their suitability as a basis for design."

AEC Publication TID-7024 (Reference 4) was used as the basic design guide for earthquake analysis. Floor response spectra were developed from the ground spectra for the Containment Buildings and Control Building to evaluate structures, systems, and components at the various elevations of those structures. Earthquake forces were applied simultaneously in the vertical and any horizontal direction. The vertical component of acceleration at any level was taken as two-thirds of the horizontal ground acceleration. The damping factors for various types of construction are listed in Reference 2, Appendix 5A.

For concrete structures and components, the basic code for determining the section strengths for original design was ACI 318-63 (Reference 5). For steel structures and components, the basic code for determining the section strengths was the AISC Steel Construction Manual, 6th Edition (Reference 6). Later codes were used for plant upgrades. Design requirement for equipment varied by equipment type. The mechanical and electrical equipment were purchased under specifications that include a description of the seismic design criteria for the plant. Motor control centers and load centers were shake table tested to demonstrate no-loss-of-function capacity under the maximum hypothetical earthquake.

The Turkey Point units were within the scope of NRC unresolved safety issue (USI) A-46 (Reference 7), which required a re-evaluation of safety-related mechanical and electrical equipment. At about the same time the NRC asked all operating power plants to undertake an investigation of design capability to extreme external events (Reference 8). Turkey Point resolved these issues as discussed in the next section. Resolution included implementation of seismic design improvements.

2.3 USI A-46 AND SEISMIC IPEEE

Generic Letter 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46" (Reference 7) addressed seismic adequacy of equipment at older nuclear plants. Turkey Point Units 3 and 4 were within the scope of USI A-46.

The evaluation of Turkey Point for resolution of USI A-46 is reported in Reference 9. FPL developed and implemented a plant specific program to satisfy requirements of USI A-46 as agreed between FPL and the USNRC. The program consisted of developing a walkdown procedure that concentrated on anchorage concerns of USI A-46, the seismic spatial interaction concerns of USI A-17 and the design concerns for large tanks in USI A-40. The program was developed by FPL to be appropriate and cost effective for addressing GL87-02 concerns at its low seismic sites. The basic requirement for the walkdown was that the equipment be able to withstand the design basis SSE at the plant and still provide its safe shutdown function. The procedure used relied on the judgment of an expert team to meet the basic requirement. A success path of equipment using safety and non-safety equipment was selected for achieving hot shutdown of the plant within a period of 8 hours.

An assessment of the anchorage adequacy was performed on each equipment item included on the safe shutdown list. This included an assessment of the seismic demand on the equipment anchorage (forces and stresses on the anchorage), the seismic capacity of the anchorage components (attachment of the equipment to the anchorage,

the anchorage itself, and the development of the anchorage to the foundation), and whether the capacity of the weak link of the anchorage system exceeded the demand.

A seismic spatial interaction assessment was performed on each equipment item included on the safe shutdown list. The following seismic spatial interaction issues were evaluated: 1) heavy objects falling (sometimes referred to as II over I interactions), 2) heavy objects sliding, swinging, vibrating or tipping (proximity interactions) and 3) inadequate flexibility of lines to accommodate seismic-induced relative movements between utility support points. An assessment was made as to whether possible interactions existed, and if it did, could the interaction preclude the equipment item from performing a safe shutdown function. Those interactions identified as possibly precluding the equipment item's safe shutdown function were identified as outliers.

The walkdown resulted in the identification of outlier equipment items with the majority of the outliers being lack of anchorage for electrical cabinets which were not previously required to be anchored. FPL addressed all outlier issues listed and the actions taken are listed in Reference 9 Table 5.0. In many cases, FPL engineering generated Plant Change/Modification (PC/M) Packages which provided for physical modification to plant equipment resulting in additional seismic "hardening" of the equipment.

Generic Letter 88-20, Supplement 4, "Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities" (Reference 8), addressed plant-specific vulnerabilities to severe accidents. For implementation of the IPEEE, Turkey Point was classified as a "reduced scope" plant per NUREG-1407 (Reference 10). As such, the review level earthquake was equal to the site SSE and completion of the USI A-46 assessment largely satisfied the seismic IPEEE requirements. FPL informed the NRC that the plant specific program developed for USI A-46 would be used to resolve GL 88-20 Supplement 4 at Turkey Point (see Reference 11).

3

Personnel Qualifications

3.1 OVERVIEW

This section of the report identifies the personnel who participated in the NTTF 2.3 Seismic Walkdown efforts. A description of the responsibilities of each Seismic Walkdown participant's role(s) is provided in Section 2 of the EPRI Seismic Walkdown Guidance (Reference 1). Resumes contained in Appendix A provide detailed personnel qualifications information.

3.2 PROJECT PERSONNEL

Table 3-1 below summarizes the names and corresponding roles of personnel who participated in the NTTF 2.3 Seismic Walkdown effort.

Table 3-1. Personnel Roles

Name	Equipment Selection Engineer	Plant Ops.	Seismic Walkdown Engineer (SWE)	Licensing Basis Reviewer	IPEEE Reviewer	Peer Reviewer
Turkey Point (FPL)						
C. Figueroa			X	X	X	X ^(note 2)
T. Satyan-Sharma			X	X	X	X ^(note 2)
G. Tullidge	X					X ^(note 1)
A. Restrepo	X				X	X
T. Jones	X	X				
Stevenson & Assoc.						
J. O'Sullivan**			X	X		X ^(note 2)
S. Baker**			X	X		X ^(note 2)

Notes:

1. Peer Review Team Leader
 2. Provided peer review of a sample of other SWE team's SWCs & AWCs.
- ** Only participated in the initial seismic walkdowns.

3.3 EQUIPMENT SELECTION PERSONNEL

The SWEL development was performed by a the Peer Review Team Lead member of the PRA Group. The SWEL was then independently reviewed by another member of the PRA Group, by Operations, and finally by Peer Reviewers from Engineering.

3.4 SEISMIC WALKDOWN ENGINEERS

The initial seismic walkdowns under Revision 1 of this Report were performed by four seismic walkdown engineers (SWEs) grouped into two seismic walkdown teams (SWTs).

The leads SWEs for the initial seismic walkdowns were engineers from Stevenson and Associates (S&A). S&A is recognized internationally as a leading seismic consultant to the nuclear industry and as a regular contributor to the advancement of earthquake engineering knowledge through funded research projects. The professional staff has expertise and capabilities in earthquake engineering, structural dynamics, and structural design. S&A has performed seismic evaluations of US nuclear power plants, using either Seismic Probabilistic Risk Assessment (PRA) or Seismic Margin Assessment, to address US Nuclear Regulatory Commission (NRC) Individual Plant Evaluation for External Events (IPEEE) for over 35 US and European plants.

Similarly, the supplemental seismic walkdowns of the deferred and inaccessible items under Revision 2 of this report were performed by three FPL SWEs grouped into two SWTs. One team in charge of the inaccessible items (Inside Containment) and the other in charge of the deferred items (Electrical Cabinets).

3.5 LICENSING BASIS REVIEWERS

The Licensing Basis Reviewers for the initial seismic walkdowns consisted of the four seismic walkdown engineers. The FPL engineers had the lead in licensing basis determinations, with support from the S&A engineers.

There were no licensing basis determinations required for the supplemental seismic walkdowns.

3.6 IPEEE REVIEWERS

IPEEE reviewers were engineers familiar with implementation of IPEEE at the Turkey Point site. The IPEEE Reviewers also participated in the SWEL preparation and seismic walkdowns.

3.7 PEER REVIEW TEAM

The Peer Review Team is listed, along with their roles and qualifications, in the *Peer Review Report* included in Appendix F.

3.8 ADDITIONAL PERSONNEL

Operations personnel also provided support to the walkdown by reviewing the list of components for accessibility. Similarly, Electrical Maintenance personnel assisted the SWTs to open cabinet doors for accessibility to anchorage.

4

Selection of SSCs

The Seismic Walkdown Equipment List is documented in the *SWEL Selection Report*, provided in Appendix B describes how the SWEL was developed to meet the requirements of EPRI Seismic Walkdown Guidance (Reference 1). The summary of the Seismic Walkdown Equipment List for the supplemental items is included in Appendix C under Table C-1 Summary of Seismic Walkdown Checklists (Supplemental Walkdowns Only). The final SWEL (both SWEL 01 & SWEL 02) which details all of the component attributes used in the screening process, as well as the Master Component List, are in tables 4-1, 4-2 and 4-3..

Table 4-1: Master Component List (SWEL 01)

Item #	USI A-46 Equip. Class #	Equipment Name	Eq Type	Tag	Location	A-46 Scope YES or NO Train & Eq. #
1	0	BORIC ACID BLENDER	MS	4K200	201 - CHARGING PUMP ROOM	NO
2	0	BASKET STRAINER TO INTAKE COOLING WTR SUPPLY FOR CCW HX A	FI	BS-4-1402	202 - COMPONENT COOLING PUMP ROOM	NO
3	0	CREVS INTAKE BALANCING DAMPER	AT	BD-1	347 - CONTROL ROOM INVERTER ROOM	NO
4	1	A-MCC (CABINET)	EL	4B05	342 - 4A MCC	NO
5	1	B-MCC (CABINET)	EL	4B06	343 - 4B MCC ROOM	YES (#23)
6	1	C-MCC (CABINET)	EL	4B07	215 - NORTH-SOUTH HALLWAY	NO
7	1	D-MCC (CABINET)	EL	4B08	234 - NEW ELECTRICAL EQUIPMENT ROOM	YES #25
8	2	4H LOAD CENTER (CABINET)	EL	4B50	234 - NEW ELECTRICAL EQUIPMENT ROOM	NO
9	2	4B02 480V HVPDS LOAD CENTER 4B (CABINET)	EL	4B02	341 - 480V LC ROOM	YES (#28)
10	2	4D LC (Part of B train) (CABINET)	EL	4B04	341 - 480V LC ROOM	YES (#29)
11	3	4AB 4.16V SWITCHGEAR 4B (CABINET)	EL	4AB	368 - 4160V SWITCHGEAR ROOM	#26 - YES
12	3	4.16KV SWITCHGEAR 4AD FOR BUS 4D	EL	4AD	430 - SWITCHGEAR ROOM 4D	NO
13	4	4610/490V TRANSFORMER FOR 480V LC 4B	TR	X05	341 - 480V LC ROOM	YES (#28)
14	5	COMPONENT COOLING PUMP B	PU	4P211B	202 - COMPONENT COOLING PUMP ROOM	YES (# 4-5)
15	5	HI HEAD SAFETY INJECTION PUMP 4B	PU	4P215B	206 - HI-HEAD SIS PUMP ROOM	NO
16	5	CONTAINMENT SPRAY PUMP B	PU	4P214B	203 - CONTAINMENT SPRAY PUMP ROOM	NO
17	5	EDG 4A OIL TRANSFER PUMP	PU	4P241A	431 - EMERGENCY DIESEL 4A DIESEL OIL TRANSFER PUMP ROOM	NO
18	5	CHARGING PUMP B	PU	4P201B	201 - CHARGING PUMP ROOM	YES (#2-3)
19	5	AUXILIARY FEEDWATER PUMP C	PU	P2C	306 - AUX FEED PUMP AREA	NO
20	5	BORIC ACID TRANSFER PUMP B	PU	4P203B	200 - BORIC ACID TANK ROOM	YES
21	6	INTAKE COOLING WATER PUMP B	PU	4P9B	370 - INTAKE AREA	YES (# 6-7)

Item #	USI A-46 Equip. Class #	Equipment Name	Eq Type	Tag	Location	A-46 Scope YES or NO Train & Eq. #
22	6	RHR PUMP B	PU	4P210B	211 - RHR PUMP ROOM	NO
23	7	BORIC ACID TO BLENDER FLOW CNTL VLV	VL	FCV-4-113A	201 - CHARGING PUMP ROOM	NO
24	7	CHG TO RCS CONTROL VALVE	VL	HCV-4-121	209 - PIPE & VALVE ROOM	NO
25	7	MN STM ISO VLV FROM S/G B	VL	POV-4-2605	300 - STEAM DECK	NO
26	7	MAIN STEAM LINE A STM DUMP TO ATMOS CNTL VALVE	VL	CV-4-1607	300 - STEAM DECK	NO
27	7	HAND CNTL VLV FOR RHR HX FLOW CNTL	VL	HCV-4-758	210 - RHR HEAT EXCHANGER ROOM	NO
28	7	TRAIN 1 S/G C FEED FLOW CONTROL VALVE	VL	CV-4-2818	302 - FEEDWATER DECK	NO
29	7	TPCW HEAT EXCHANGERS ISOLATION VALVE	VL	POV-4-4883	334 - TURBINE PLANT HEAT EXCHANGER AREA	NO
30	7	NON REGEN HX OUTLET TO VCT OR DEMIN TEMP CNTL VLV	VL	TCV-4-143	201 - CHARGING PUMP ROOM	NO
31	7	STEAM GENERATOR B MAIN FEEDWATER FLOW CONTROL VALVE	VL	FCV-4-488	302 - FEEDWATER DECK	NO
32	8	HHSI TO COLD LEG MOV	VL	MOV-4-843B	203 - CONTAINMENT SPRAY PUMP ROOM	NO
33	8	RWST MTR OP ISO VALVE TO SI & RHR PUMPS	VL	MOV-4-864B	217 - RWST AREA	NO
34	8	RECIRC SUMP TO RHR PUMP SUCTION MOTOR OPERATED VALVE	VL	MOV-4-861B	211 - RHR PUMP ROOM	NO
35	8	MTR OPERATED VALVE FROM STEAM GENERATOR A TO AUX FW PP TURBINES	VL	MOV-4-1404	301 - BELOW STEAM DECK	NO
36	8	CTMT SPRAY PMP B DISCH ISO VLV	VL	MOV-4-880B	203 - CONTAINMENT SPRAY PUMP ROOM	NO
37	8	EDG 4A OIL DAY TANK INLET CONTROL SOLENOID VALVE	VL	SV-4-2046A	407 - A DIESEL GENERATOR BUILDING (LOWER LEVEL)	NO
38	8	EMERGENCY BORATION CONTROL VALVE	VL	MOV-4-350	201 - CHARGING PUMP ROOM	NO
39	8	RECIRC SUMP TO RHR PUMP SUCTION MOTOR OPERATED VALVE	VL	MOV-4-860B	210 - RHR HEAT EXCHANGER ROOM	NO
40	8	RWST TO RHR PUMP SUCTION VALVE	VL	MOV-4-862A	211 - RHR PUMP ROOM	NO
41	8	RHR PUMP RECIRC TO RWST	VL	MOV-4-863B	210 - RHR HEAT EXCHANGER ROOM	NO
42	8	SI TO LOOP A&B HOT LEG MTR OP ISO VLV	VL	MOV-4-869	209 - PIPE & VALVE ROOM	NO
43	9	AXIAL FLOW VENTILATION FAN	BL	4V65B	430 - SWITCHGEAR ROOM 4D	NO
44	9	EDG FAN ASSEMBLIES (RADIATOR FAN)	BL	N/A	309 - DIESEL GENERATOR BUILDING (LOWER LEVEL)	YES #21
45	9	4A EDG ROOM VENT EXHAUST FAN	BL	4V64A	424 - EMERGENCY DIESEL 4A CONTROL ROOM	NO
46	10	LOAD CENTER ROOM 4A/B - AIR HANDLING UNIT	BL	4E241B	341 - 480V LOAD CENTER ROOM	NO
47	10	LOAD CENTER ROOM 4C/D - AIR HANDLING UNIT (TRAIN-B)	BL	4E242B	341 - 480V LOAD CENTER ROOM	NO
48	10	SWITCHGEAR ROOM 4B - AIR HANDLING UNIT	BL	4E243B	368 - 4160 V SWITCHGEAR ROOM	NO
49	10	AIR HANDLER UNIT FOR ELEC EQUIP RM A/C CONDENSER E233	BL	V77	234 - NEW ELECTRICAL EQUIPMENT ROOM	NO
50	10	CONTROL ROOM AIR HANDLING UNIT	BL	E16A	310 - CABLE SPREADING ROOM	NO
51	11	LC & SWGR ROOMS A/C SYSTEM - CHILLER PACKAGE 1B (TRAIN-B)	MS	4E239B	315 - LP TURBINE NORTH AREA	NO
52	12	EDG 4A AIR COMPRESSOR	BL	4CM226A	425 - EMERGENCY DIESEL 4A AIR START AREA.	NO
53	14	4D23 (DISTRIBUTION PANEL)	EL	4D23	347 - CONTROL ROOM INVERTER ROOM	YES (#42)
54	14	4D01 (DISTRIBUTION PANEL)	EL	4D01	310 - CABLE SPREADING ROOM	YES (#41)
55	14	100 AMP 2-POLE AUTOMATIC TRANSFER SWITCH (CHECK CABINET)	IB	4S77	234 - NEW ELECTRICAL EQUIPMENT ROOM	NO

Item #	USI A-46 Equip. Class #	Equipment Name	Eq Type	Tag	Location	A-46 Scope YES or NO Train & Eq. #
56	15	4A BATTERY RACK	BA	4D24	347 - CONTROL ROOM INVERTER ROOM	YES. (#37) Train A
57	15	4B BATTERY RACK	BA	4D03	346 - BATTERY ROOM	YES. (#- 38) Train B
58	16	4B1 BATTERY CHARGER	BA	4D02	310 - CABLE SPREADING ROOM	YES (#34)
59	16	4B2 BATTERY CHARGER	BA	4D02A	234 - NEW ELECTRICAL EQUIPMENT ROOM	NO
60	16	4A1 BATTERY CHARGER	BA	4D25	347 - CONTROL ROOM INVERTER ROOM	NO
61	16	STATIC INVERTER 4C 125 VDC/120 VAC 7.5 KVA (CABINET)	IT	4Y05	347 - CONTROL ROOM INVERTER ROOM	YES (#45)
62	16	STATIC INVERTER 4D 125 VDC/120 VAC 7.5 KVA (CABINET)	IT	4Y07	347 - CONTROL ROOM INVERTER ROOM	YES (#46)
63	17	4A DIESEL GENERATOR	GE	4K4A	423 - EMERGENCY DIESEL 4A	NO
64	18	CONTROL ROOM PROTECTION RACK (CHECK FOR SEISMIC INTERACTION)	IN	4QR35	361 - CONTROL ROOM GENERAL	NO
65	19	SWGR RM 4D FAN 4V65B TEMP SWITCH	IN	TIS-4-6413B	430 - SWITCHGEAR ROOM 4D	NO
66	20	4C264 - ALTERNATE SHUTDOWN PANEL	IN	4C264	368 - 4KV SWGR.ROOM B SIDE	NO
67	20	VERTICAL PANEL A CHECK FOR SEISMIC INTERACTION	IN	4C04	360 - CONTROL ROOM VERTICAL PANEL	NO
68	20	VERTICAL PANEL B CHECK FOR SEISMIC INTERACTION	IN	4C06/4C05	360 - CONTROL ROOM VERTICAL PANEL	YES (#55)
69	20	CONTROL ROOM CONTROL CONSOLE	IN	CONSOLE	362 - CONTROL ROOM CONTROL CONSOLE	NO
70	20	SEQUENCER 4C23A - CABINET	IN	4C23A	368 - 4160 V SWITCHGEAR ROOM	YES (#49)
71	20	SEQUENCER 4C23B - CABINET	IN	4C23B	368 - 4160 V SWITCHGEAR ROOM	YES (#50)
72	20	4A EDG CONTROL PANEL	IN	4C13A	427 - EMERGENCY DIESEL 4A CONTROL ROOM	YES (#22)
73	21	BORIC ACID STORAGE TANK C	AC	T205C	200 - BORIC ACID TANK ROOM	YES (#11)
74	21	REFUELING WTR STORAGE TK	AC	4T1	217 - RWST	YES (#14)
75	21	RHR HEAT EXCHANGER B	HT	4E206B	210 - RHR HEAT EXCHANGER ROOM	NO
76	21	CONDENSATE STORAGE TANK	AC	4T8	331 - CONDENSATE STORAGE TANK	YES (#12)
77	21	COMPONENT COOLING HEAT EXCHANGER B	HT	4E207B	202 - COMPONENT COOLING PUMP ROOM	YES (#53)
78	21	COMPONENT COOLING SURGE TANK	AC	4T218	212 - SPENT FUEL PIT ROOM	YES (#17)
79	21	DIESEL OIL DAY TANK 4A FOR EDG	AC	4T260A	423 - EMERGENCY DIESEL 4A	NO
80	21	DIESEL OIL STORAGE TANK 4A	AC	4T259A	432 - EMERGENCY DIESEL 4A DIESEL OIL STORAGE TANK ROOM	NO
81	21	EDG 4A STARTING AIR ACCUMULATOR TANK	AC	4T270A	425 - EMERGENCY DIESEL 4A AIR START AREA.	NO
82	21	SEAL WATER HEAT EXCHANGER FOR CONTAINMENT SPRAY PUMP B	HT	3P214B HEAT EXCHANGER	203 - CONTAINMENT SPRAY PUMP ROOM	NO

Table 4-2: Master Component List – Deferred Containment Items (SWEL 01)

Item #	USI A-46 Equip. Class #	Equipment Name	Eq Type	Tag	Location	A-46 Scope YES or NO Train & Eq. #
83	7	PRESSURIZER PORV SOLENOID VALVE	VL	SV-4-455C	103 - PRESSURIZER CUBICLE	NO
84	7	PRZR PORV N2 BACKUP SUPPLY PRESSURE REGULATOR	VL	PCV-4-4885	123 - CONTAINMENT 58 FOOT ELEVATION	NO
85	8	PRESSURIZER PORV BLOCK VALVE	VL	MOV-4-535	103 - PRESSURIZER CUBICLE	NO
86	8	SI ACCUM A DISCH MOTOR OPERATED VLV	VL	MOV-4-865A	121 - CONTAINMENT 14 FOOT ELEVATION OUTSIDE BIO-WALL	NO
87	8	RHR LO HEAD SI TO LOOP A MOTOR OPERATED VLV	VL	MOV-4-744A	121 - CONTAINMENT 14 FOOT ELEVATION OUTSIDE BIO-WALL	NO
88	8	NORMAL RHR INLET FROM RCS MOTOR OPERATED VLV	VL	MOV-4-751	121 - CONTAINMENT 14 FOOT ELEVATION OUTSIDE BIO-WALL	NO
89	19	DELTA T-TAVG CH I COLD LEG 1 THERMOWELL	IX	TW-4-412C	104 - RCP A CUBICLE	NO
90	21	EMERGENCY CONTAINMENT COOLER B	HT	4V30B	123 - CONTAINMENT 58 FOOT ELEVATION	NO
91	21	SI ACCUM B	AC	4T229B	114 - ACCUMULATOR B AREA	NO

Table 4-3: Master Component List (SWEL 02)

Item #	USI A-46 Equip. Class #	Eq Type	Tag	Equipment Name	Location	Seismic Cat
1	0	VL	4-797	SFP COOLING WATER PUMP LOW SUCTION VALVE	223 - SPENT FUEL PIT PUMP/HEAT EXCHANGER ROOM	Rapid Drain
2	0	VL	4-910	SFP CLG PMP A SUCT ISO VLV	223 - SPENT FUEL PIT PUMP/HEAT EXCHANGER ROOM	I
3	0	IN	LT-4-651	SPENT FUEL PIT LEVEL TRANSMITTER	212 - SPENT FUEL PIT ROOM	Rapid Drain
4	0	VL	4-12-031	TUBE GATE ISOLATION VALVE	212 - SPENT FUEL PIT ROOM	Rapid Drain
5	5	PU	4P212A	SFP CLG WTR PMP A	223 - SPENT FUEL PIT PUMP/HEAT EXCHANGER ROOM	Rapid Drain
6	5	PU	EMERG SFP CLG PMP	EMERGENCY SPENT FUEL PIT COOLING PUMP	223 - SPENT FUEL PIT PUMP/HEAT EXCHANGER ROOM	Rapid Drain
7	21	HT	4E208A	SPENT FUEL PIT HEAT EXCHANGER	223 - SPENT FUEL PIT PUMP/HEAT EXCHANGER ROOM	Rapid Drain

5

Seismic Walkdowns and Area Walk-Bys

5.1 OVERVIEW

The Seismic Walkdowns and Area Walk-Bys were conducted by 2-person teams of trained Seismic Walkdown Engineers, in accordance with the EPRI Seismic Walkdown Guidance (Reference 1). The initial seismic walkdowns occurred on September 17-21, 2012. Components in the Containment building were inaccessible at the time of the initial seismic walkdowns and were later inspected in February 2013. Electrical cabinets with restricted access were also later inspected in May 2013. The Seismic Walkdowns and Area Walk-Bys are discussed in more detail in the following sections.

5.2 SEISMIC WALKDOWNS

The Seismic Walkdowns focused on the seismic adequacy of the items on the SWEL as provided in Appendix B of this report. The Seismic Walkdowns also evaluated the potential for nearby SSCs to cause adverse seismic interactions with the SWEL items. The Seismic Walkdowns focused on the following adverse seismic conditions associated with the subject item of equipment:

- Adverse anchorage conditions
- Adverse seismic spatial interactions
- Other adverse seismic conditions

The results of the Seismic Walkdowns have been documented on the Seismic Walkdown Checklist (SWC) provided in the EPRI guidance document, Appendix C.

The Initial Seismic Walkdowns were performed for 88 of the 98 items identified on the Turkey Point Unit 4 SWEL. The remaining were later inspected during the next refueling outage as previously noted. The associated SWCs for the remaining items are provided in Appendix C of this report. Additionally, photos have been included with most SWCs to provide a visual record of the item along with any comments noted on the SWC. These photos are not included to limit the size of this report but are on file. Drawings and other plant records are cited in some of the SWCs, but are not included with the SWCs because they are readily retrievable documents through the station's document management system.

Inspection for certain items could not be completed due to access restrictions during the initial Seismic Walkdowns. Appendix E of this report identifies the equipment previously classified as inaccessible during the initial seismic walkdowns. Currently, all the inaccessible and deferred items have been inspected, with the exception of the CCW Surge Tank (4T218) due to inaccessibility. However, a sufficient number of items of this type were initially included in the SWEL. Therefore, it was determined to be acceptable to remove this item from the SWEL.

The following subsections describe the approach followed by the SWEs to identify potentially adverse anchorage conditions, adverse seismic interactions, and other adverse seismic conditions during the Seismic Walkdowns.

5.2.1 Adverse Anchorage Conditions

Guidance for identifying anchorage that could be degraded, non-conforming, or unanalyzed relied on visual inspections of the anchorage and verification of anchorage configuration. Details for these two types of evaluations are provided in the following two subsections.

The evaluation of potentially adverse anchorage conditions described in this subsection applies to the anchorage connections that attach the identified item of equipment to the civil structure on which it is mounted. For example, the welded connections that secure the base of a Motor Control Center (MCC) to the steel embedment in the concrete floor would be evaluated in this subsection. Evaluation of the connections that secure components within the MCC is covered later in the subsection "Other Adverse Seismic Conditions."

Visual Inspections

The purpose of the visual inspections was to identify whether any of the following potentially adverse anchorage conditions were present:

- Bent, broken, missing, or loose hardware
- Corrosion that is more than mild surface oxidation
- Visible cracks in the concrete near the anchors
- Other potentially adverse seismic conditions

Based on the results of the visual inspection, the SWEs judged whether the anchorage was potentially degraded, non-conforming, or unanalyzed. The results of the visual inspection were documented on the SWC, as appropriate. If there was clearly no evidence of degraded, nonconforming, or unanalyzed conditions, then it was indicated on the checklist and a licensing basis evaluation was not necessary. However, if it was not possible to judge whether the anchorage is degraded, nonconforming, or unanalyzed, then the condition was entered into the Corrective Action Program as a potentially adverse seismic condition for further evaluation.

Additionally, any significant comments are noted on the SWCs. Drawings and other plant design documents are cited in some of the SWCs, but they are not included with the SWCs because they are readily available in the plant's electronic document management system.

5.2.2 Anchorage Configuration Confirmation

As required by the EPRI Seismic Walkdown Guidance (Reference 1, page 4-3), at least 50% of the items were confirmed to be anchored consistent with design drawings. Line-mounted equipment (e.g., valves mounted on pipelines without separate anchorage) was not evaluated for anchorage adequacy and was not counted in establishing the 50% sample size.

Examples of documentation that was considered to verify that the anchorage installation configurations are consistent with the plant documentation include the following:

- Design drawings
- Seismic qualification reports of analyses or shake table tests

The SWC listed in Appendix C indicate the anchorage verification status for components as follows:

N/A: component that is line-mounted and/or is not anchored to the civil structure and therefore does not count in the anchorage confirmation total.

Y: component that is anchored to the civil structure and was chosen for anchorage configuration confirmation.

N: component which had anchorage but was not chosen for anchorage configuration confirmation.

See Table 5-1 below for the accounting of the 50% anchorage configuration confirmations, and the individual SWC forms in Appendix C for the specific documents used in each confirmation. Total Items Chosen includes two deferred items.

Table 5-1: Anchorage Configuration Confirmation

Total SWEL Items	SWEL Items without Anchorage (N/A)	Minimum Required	Total Items Chosen
A	B	$(A - B) / 2$	
98	29	35	37

*CCW Surge Tank (4T218) has been deleted from SWEL

5.2.3 Adverse Seismic Spatial Interactions

An adverse seismic spatial interaction is the physical interaction between the SWEL item and a nearby SSC caused by relative motion between the two during an earthquake. An inspection was performed in the area adjacent to and surrounding the SWEL item to identify any seismic interaction conditions that could adversely affect the capability of that SWEL item to perform its intended safety-related functions.

The three types of seismic spatial interaction effects that were considered are:

- Proximity
- Failure and falling of SSCs (Seismic II over I)
- Flexibility of attached lines and cables

Detailed guidance for evaluating each of these types of seismic spatial interactions is described in the EPRI guidance document, Appendix D: Seismic Spatial Interaction.

The Seismic Walkdown Engineers exercised their judgment to identify seismic interaction hazards. Section 5.2.5 provides a summary of issues identified during the Initial Seismic Walkdowns. No new issues were identified during the Supplement Seismic Walkdowns.

5.2.4 Other Adverse Seismic Conditions

In addition to adverse anchorage conditions and adverse seismic interactions, described above, other potentially adverse seismic conditions that could challenge the seismic adequacy of a SWEL item were evaluated. These inspections were mostly associated with in-cabinet inspections of selected electrical equipment. Examples of the types of conditions that could pose potentially adverse seismic conditions include the following:

- Degraded conditions
- Loose or missing fasteners that secure internal or external components to equipment
- Large, heavy components mounted on a cabinet that are not typically included by the original equipment manufacturer
- Cabinet doors or panels that are not latched or fastened

Any identified other adverse seismic conditions are documented on the items' SWC and Table 5-2, as applicable.

5.2.5 Issues Identification during Seismic Walkdowns

Table 5-2 provides a summary of issues identified during the Initial Equipment Seismic Walkdowns and recorded on SWCs. The tracking of issue resolution is identified in the table. Items are grouped based on the walkdown issue cited:

- Anchorage issues
- Seismic interaction issues
- Other conditions
- Anchorage documentation not available
- Anchorage inspection could not be fully completed

Many of the potentially adverse anchorage conditions found are related to documentation of as-found anchorage. In those cases either the as-found anchorage was not consistent with the available document, or the document identifying the anchorage design could not be identified. Except for the item E16B air handling unit (AHU), no concerns with overall anchorage strength were identified during the Initial Seismic Walkdowns. There was one instance where anchor corrosion was cited, but the extent of corrosion is minor at this time. The E16B AHU was found to be lacking positive base anchorage. Low seismic ruggedness of attached piping was also cited as a concern. The operability of the unit was addressed and the unit was found to be operable.

Potential seismic interaction concerns were identified but none of the issues were considered to be significant hazards but will be addressed to reduce risk. Most equipment interaction issues are related to clearances between equipment and adjacent items and improper seismic housekeeping. Under good seismic housekeeping practice, transient and moveable items (e.g., ladders) should be restrained or stowed such that they will not slide into or fall against important plant equipment

Items considered minor maintenance issues, such as loose or missing thumbscrews or latches, were found and cited under "Other" potentially adverse conditions. In addition, these items were entered into the Corrective Action Program under separate Action Requests (ARs). None of these items affect component anchorage.

For items requiring anchorage verification, the SWC anchorage verification checklist item was set to "Unknown" if an anchorage design document could not be found. Notwithstanding, the configuration was assessed to ensure that there was no immediate operability concern. Also, anchorage checklist items were set to "Unknown" when the walkdown team could not see all anchors. For example, some anchors (relatively few) of control cabinets were covered by wiring. A comment is included on the corresponding SWC to explain that certain anchors out of the group could not be seen. Again, the configuration was assessed to establish that there was no immediate operability concern.

For the Supplemental Seismic Walkdowns, all the design documentation for those items requiring anchorage verification was found and there were no material deficiencies. Accordingly, no additional items were entered into Table 5-2.

Revision 2 of this Report also provides an update on the status for the items that were entered into the Corrective Action Program during the initial Seismic Walkdowns.

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
Anchorage Issues				
4B07 C-MCC (CABINET)	Member sizes for struts of upper wall supports are not consistent with drawing 5614-C-1790 Sh. 3. Also, two missing bolts are seen internally at the base anchorage and anchorage configuration cannot be verified (required number of base anchors not identified). Also there is corrosion at the lower back angles inside the MCC. Also a hairline crack in floor in front of cubicle 40762 travels into the concrete pad.	<p>This is a top supported MCC located at a low elevation. Item is subject to relatively low seismic load with negligible tension on base anchors.</p> <p>The anchorage of the unit was upgraded as part of USI A-46 resolution.</p> <p>The corrosion is not an immediate capacity concern because there is an adequate room for the base shear load path.</p> <p>Plant drawings and documents need to be changed to reflect as-found anchorage configuration.</p> <p>Perform maintenance to evaluate and correct MCC base corrosion.</p>	YES	Work Request has been initiated to restore the anchorage of the MCC per the design drawing.
4D03 4B BATTERY RACK	Anchorage seen to be a mix of 5/8 and 3/8 diameter concrete expansion anchors (CEAs) each rack. Anchorage does not match 5610-C-1369.	<p>As-found anchorage is approx. equivalent to that shown on drawing. Also, Item was reviewed for USI A-46 and anchorage was found to be acceptable.</p> <p>Plant drawings and documents need to be changed to reflect as-found anchorage configuration.</p>	YES	Drawings revised.

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
4D24 4A BATTERY RACK	Anchorage seen to be a mix of 5/8 and 1/2 diameter CEA's. Anchorage does not match 5610-C-1369.	As-found anchorage is approximately equivalent to that shown on drawing. Also, Item was reviewed for USI A-46 and anchorage was found to be acceptable. Revise drawings to match as-found condition.	YES	Drawings revised.
4P9B INTAKE COOLING WATER PUMP B	Bolts have rust and there is some flaking. Also top of anchor stud has rust beyond surface for some anchors.	As-found anchorage is not significantly degraded at this time. Perform maintenance to clean the bolts.	YES	Work Order has been assembled
4T1 REFUELING WTR STORAGE TK	Moderate corrosion on anchor bolts at several locations.	Per PTN calculation PTN-BFJC-91-016 anchorage strength is controlled by concrete pullout failure and there is substantial margin with respect to bolt axial stress. Therefore it is judged that as-found anchorage has not significantly degraded at this time. Perform maintenance.	YES	Maintenance activities have been scheduled.

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
4T8 CONDENSATE STORAGE TANK	Due to past corrosion, a group of 1-3/8 anchors at the south and southwest areas where bolts enter the top of the pad. The reduced strength of the bolts needs to be verified as acceptable. The bolts have been painted so ongoing corrosion does not appear to be an issue.	Per PTN calculation PTN-BFJC-91-016 anchorage strength is controlled by concrete pullout failure and there is substantial margin with respect to bolt axial stress. Therefore it is judged that as-found anchorage has not significantly degraded at this time. Update PTN-BFJC-91-016 to reflect as-found anchorage configuration (reduced cross sections for some bolts).	YES	No documentation update required.
4Y05 STATIC INVERTER 4C 125 VDC/120 VAC 7.5 KVA	Anchorage is (5) x 5/8 diameter CEAs. Anchorage does not match 5610-C-652 Sh. 2.	As-found anchorage has substantial strength and is not deficient given overall capacity of the currently installed one. Plant drawings and documents need to be changed to reflect as-found anchorage configuration.	YES	Documentation revision in progress
CONSOLE CONTROL ROOM CONTROL CONSOLE	Anchors along the cabinet front are typically 2' on center. Two locations in rear seen to be missing an anchor (see empty holes).	Item is a low-height cabinet with substantial anchorage. As-found anchorage is judged to be not significantly degraded given overall capacity of anchorage. Plant drawings and documents need to be changed to reflect as-built configuration.	YES	Documentation revision in progress

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
E16A CONTROL ROOM AIR HANDLING UNIT	Unit appears to be unanchored. Feet of unit appear to sit on vibration isolation pads (4 places).	An analysis of the as-found condition was performed and determined to be acceptable for its functionality for the seismic loading. Operability of unit confirmed by prompt operability determination (POD). Evaluate and take corrective action.	YES	Further evaluation performed. Adequate safety margin was found.
4D25 4A1 BATTERY CHARGER	Floor crack seen in front area, may continue near CEA at front. No cracks seen in rear area.	Even with floor crack, as-found anchorage has substantial strength and is not deficient given overall capacity of anchorage. Perform evaluation as-found anchorage configuration with knockdown for crack.	YES	Work Order has been assembled
X05 4160/480V TRANSFORMER FOR 480V LC 4B	Anchorage is welded to embedded steel. 4 of 6 welds are 4" long and 2 of 6 welds are about 2" long. Anchorage does not match drawing 5610-E-9-35.	As-found welded anchorage has substantial strength and is not deficient given overall capacity of this type of configuration. Plant drawings and documents need to be changed to reflect as-found anchorage configuration.	YES	Documentation revision in progress.

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
<i>Seismic Interaction Issues</i>				
4C04 VERTICAL PANEL A	Egg crate ceiling tiles above are not tied to framing and can fall on operators and soft targets. This issue was cited in USI A-46 inspection.	Ceiling tiles are plastic and light weight. Therefore, the hazard imposed is judged to be low. Review indicates that after USI A-46 inspection, metal ceiling tiles were replaced with plastic ones. AR was written to verify issue close-out.	YES	Support documentation was retrieved. Item was closed.
4C06_4C05 VERTICAL PANEL B	Egg crate ceiling tiles above are not tied to framing and can fall on operators and soft targets. This issue was cited in USI A-46 inspection.	Ceiling tiles are plastic and light weight. As such, the hazard imposed is judged to be low. Review indicates that after USI A-46 inspection, metal ceiling tiles were replaced with plastic ones. AR was written to verify issue close-out.	YES	Support documentation was retrieved. Item was closed.
CONSOLE CONTROL ROOM CONTROL CONSOLE	Egg crate ceiling tiles above are not tied to framing and can fall on operators and soft targets. This issue was cited in USI A-46 inspection.	Ceiling tiles are plastic and light weight. As such, the hazard imposed is judged to be low. Review indicates that after USI A-46 inspection, metal ceiling tiles were replaced with plastic ones. AR was written to verify issue close-out.	YES	Support documentation was retrieved. Item was closed.

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
4K4A 4A DIESEL GENERATOR	Two pendulum lights above on-skid panel at southwest may be a hazard. Lights will bang against hard surfaces and light shade may fall and are a potential hazard to soft targets on DG skid.	The condition is undesirable but the hazard is low. Verify shades are rugged and will not fall OR install safety wires to prevent shade from falling.	YES	As an enhancement, Engineering recommended the installation of lateral support for the lighting. Repair activity is being assembled.
4P203B BORIC ACID TRANSFER PUMP B	Large cover plates for a nearby recessed area are stored next to the pump.	No soft targets are vulnerable. This is a seismic housekeeping issue. Condition was not considered to be an immediate hazard. Take actions to ensure existing seismic housekeeping procedures are followed.	YES	Large cover plates removed.
HCV-4-121 CHG TO RCS CONTROL VALVE	Limit switch electrical elbow is within 1/2" of an adjacent valve.	Based on the difference in mass between the valve and the tubing, it is judged that the hazard to valve functionality is low. Evaluate and increase the clearance as needed.	YES	Per Engineering Evaluation accepted As-Is. Induced force from the relative low horizontal accelerations acts over the actuator diaphragm housing instead of the spring actuator that brings the valve to a safety position. No field work required.

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
HCV-4-758 HAND CNTL VLV FOR RHR HX FLOW CNTL	Valve HCV-4-758 is in contact with the support for instrument air line at the floor level.	Considering the fact that valves are rugged and the difference in mass of the valve and the instrument line it was judged that the hazard to valve functionality is low. Verify valve ruggedness for impact load OR increase clearance to an acceptable level.	YES	Per Engineering Evaluation, accepted As-Is. Support found to be in contact with the housing for pneumatic components. Therefore, no adverse effect on valve's functionality. No field work required.
MOV-4-350 EMERGENCY BORATION CONTROL VALVE	Gearbox is approximately 3/4" from an adjacent electrical conduit.	Considering the fact that gear box is a rugged component and the difference in mass of the gear box and the electrical conduit, it was judged that the hazard to the gear box functionality is low. Verify the electrical conduit interface load is low OR increase clearance to an acceptable level.	YES	Per Engineering Evaluation, accepted As-Is. Enough flexibility was found in the system. No field work required.

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
<i>Other conditions</i>				
4B50 4H LOAD CENTER (CABINET)	Lift trolley on roof of cabinet appears unrestrained side-to-side and may bang against stop. This may be a relay chatter issue.	<p>Per field walkdown post-inspection it was determined that the subject lift trolley and the associated metal hook are always retracted into the rail housing. As such, a banging against the stop is unlikely to occur. In addition, the stop is welded to the rail housing. Therefore, isolated from the rigid upper frame of the cabinet with electrical equipment inside.</p> <p>As such, this condition was considered to not represent a potential or immediate operability concern</p> <p>Recommended to provide positive restraint to roof trolley to prevent impact against stops.</p>	YES	Per Engineering Evaluation, accepted As-Is. Enough flexibility was found in the system. No field work required.
4D03 4B BATTERY RACK	<p>Typically there is a 3/8 to 1/2" (approx.) gap between front of batteries and horizontal rail. Condition is common for all inspected racks. Unknown if this is acceptable (batteries can slide forward to rail).</p>	<p>Best seismic practice for battery racks is to make batteries snug against rails or spacers in all lateral directions.</p> <p>Similar conditions were identified during the A-46 assessment and judged to be acceptable for operability. Further evaluation of the as-qualified condition is to be performed to determine if spacers should be installed to increase margin.</p>	YES	Repair activities have been scheduled.

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
4D24 4A BATTERY RACK	Same as above. Typically there is a 3/8 to 1/2" (approx.) gap between front of batteries and horizontal rail. Condition is common for all inspected racks. Unknown if this is acceptable (batteries can slide forward to rail).	Best seismic practice for battery racks is to make batteries snug against rails or spacers in all lateral directions. Similar conditions were identified during the A-46 assessment and judged to be acceptable for operability. Further evaluation of the as-qualified condition is to be performed to determine if spacers should be installed to increase margin.	YES	Repair activities have been scheduled.
E16A CONTROL ROOM AIR HANDLING UNIT	There is non-rugged rod hung copper tubing in the area and tubing is attached to E16A. The tubing may be a spray hazard. Also, leakage from tubing may impair function of E16A.	Operability of unit confirmed by prompt operability determination (POD). The impact of spray was evaluated and it would not adversely affect the function of the air handler. An additional AR was written to address this specific condition and to review adverse effects, if any of the copper tubing on the functionality of the air handlers. The operability screening of the AR determined that the AHU remain Operable.	YES	Further evaluation performed. Adequate safety margin was found.

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
<i>Anchorage documentation not available</i>				
4C13A 4A EDG CONTROL PANEL	Item is designated for anchorage verification; a document that identifies anchorage design was not located.	Control panel has been confirmed to be welded to an embedded metal frame at various locations. As such, it would not be adversely affected by seismic loads. The anchorage currently installed is judged to be adequate to withstand its design loads based on the capacity of the anchorage in comparison to the mass and configuration of the panel. Design drawings will be updated to document the as-built configuration of the anchorage.	YES	Documentation update in progress
4D01 (DISTRIBUTION PANEL)	Item is designated for anchorage verification; a document that identifies anchorage design was not located.	Based on field walkdown, the associated distribution panel has been confirmed to have anchor bolts (Sketch provided in the Checklist) at various locations. As such, it would not be adversely affected by seismic loads. The anchorage currently installed is judged to be adequate to withstand its design loads based on the capacity of the anchorage in comparison to the mass and configuration of the panel. Design drawings will be updated to document the as-built configuration of the anchorage.	YES	Documentation update in progress

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
<p align="center">4E208A</p> <p>SPENT FUEL PIT HEAT EXCHANGER</p>	<p align="center">Item is designated for anchorage verification; a document that identifies anchorage design was not located.</p>	<p>Heat exchanger has been confirmed to have anchors bolts to a concrete pedestal (Sketch provided in the Checklist). As such, it would not be adversely affected by seismic loads. The anchorage currently installed is judged to be adequate to withstand its design loads based on the capacity of the anchorage in comparison to the mass and configuration of the heat exchanger.</p> <p>Design drawings and calculations will be updated to document the as-built configuration of the anchorage.</p>	<p align="center">YES</p>	<p align="center">Documentation update in progress</p>
<p align="center">4E239B</p> <p>LC & SWGR ROOMS A/C SYSTEM - CHILLER PACKAGE 1B (TRAIN-B)</p>	<p align="center">Item is designated for anchorage verification; a document that identifies anchorage design was not located.</p>	<p>Chiller package has been confirmed to have anchor bolts to a welded steel frame (Sketch provided in the Checklist). As such, it would not be adversely affected by seismic loads. The anchorage currently installed is judged to be adequate to withstand its design loads based on the capacity of the anchorage in comparison to the mass and configuration of the chiller unit.</p> <p>Design drawings and calculations will be updated to document the as-built configuration of the anchorage.</p>	<p align="center">YES</p>	<p align="center">Documentation update in progress</p>

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
<p>4P212A SFP CLG WTR PMP A</p>	<p>Item is designated for anchorage verification; a document that identifies anchorage design was not located.</p>	<p>Based on field walkdown, the associated pump frame has been confirmed to have anchor bolts to a concrete pedestal (Sketch provided in the Checklist). As such, it would not be adversely affected by seismic loads. The anchorage currently installed is judged to be adequate to withstand its design loads based on the capacity of the anchorage in comparison to the mass and configuration of the pump.</p> <p>Design drawings and calculations will be updated to document the as-built configuration of the anchorage.</p>	<p>YES</p>	<p>Documentation update in progress</p>
<p>4P241A EDG 4A OIL TRANSFER PUMP</p>	<p>Item is designated for anchorage verification; a document that identifies anchorage design was not located.</p>	<p>Based on field walkdown, the associated pump frame has been confirmed to have anchor bolts to a concrete pedestal (Sketch provided in the Checklist). As such, it would not be adversely affected by seismic loads. The anchorage currently installed is judged to be adequate to withstand its design loads based on the capacity of the anchorage in comparison to the mass and configuration of the pump.</p> <p>Design drawings will be updated to document the as-built configuration of the anchorage.</p>	<p>YES</p>	<p>Documentation update in progress</p>

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
<p align="center">4QR35</p> <p align="center">CONTROL ROOM PROTECTION RACK</p>	<p align="center">Item is designated for anchorage verification; a document that identifies anchorage design was not located.</p>	<p>Based on field walkdown, the associated protection rack has been confirmed to have anchor bolts (Sketch provided in the Checklist) at various locations. As such, it would not be adversely affected by seismic loads. The anchorage currently installed is judged to be adequate to withstand its design loads based on the capacity of the anchorage in comparison with the mass and configuration of the cabinet.</p> <p>Design drawings will be updated to document the as-built configuration of the anchorage.</p>	<p align="center">YES</p>	<p align="center">Documentation update in progress</p>
<p align="center">4D02</p> <p align="center">4B1 BATTERY CHARGER</p>	<p align="center">Item is designated for anchorage verification; a document that identifies anchorage design was not located.</p>	<p>Based on field walkdown, the associated battery charger has been confirmed to be anchor bolted to an embedded steel frame (Sketch provided in the Checklist). As such, it would not be adversely affected by seismic loads. The anchorage currently installed is judged to be adequate to withstand its design loads based on the capacity of the anchorage in comparison with the mass and configuration of the cabinet.</p> <p>This is a configuration control issue. Design drawings will be updated to document the as-built configuration of the anchorage.</p>	<p align="center">YES</p>	<p align="center">Documentation update in progress</p>

Table 5-2: Table of Actions Resulting from Seismic Walkdown Inspection

Equipment ID	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status as of Rev. 2
<p align="center">4D25</p> <p>4A1 BATTERY CHARGER</p>	<p>Item is designated for anchorage verification; a document that identifies anchorage design was not located.</p>	<p>Based on field walkdown, the associated battery charger has been confirmed to be anchor bolted to an embedded steel frame (Sketch provided in the Checklist). As such, it would not be adversely affected by seismic loads. The anchorage currently installed is judged to be adequate to withstand its design loads based on the capacity of the anchorage in comparison with the mass and configuration of the cabinet.</p> <p>This is a configuration control issue. Design drawings will be updated to document the as-built configuration of the anchorage.</p>	<p align="center">YES</p>	<p align="center">Documentation update in progress</p>

5.3 AREA WALK-BYS

The purpose of the Area Walk-Bys is to identify potentially adverse seismic conditions associated with other SSCs located in the vicinity of the SWEL items. Vicinity is generally defined as the room containing the SWEL item. If the room is very large (e.g., Turbine Hall), then the vicinity is identified based on judgment, e.g., on the order of about 35 feet from the SWEL item. This vicinity is described on the Area Walk-By Checklist (AWC), shown in Appendix D of this report. A total of 47 AWCs were completed for Turkey Point Unit 4 during the initial seismic walkdowns. Five (5) additional AWCs were completed during the supplemental seismic walkdowns.

The key examination factors that were considered during Area Walk-Bys include the following:

- Anchorage conditions (if visible without opening equipment)
- Significantly degraded equipment in the area
- A visual assessment (from the floor) of cable/conduit raceways and HVAC ducting (e.g., condition of supports or fill conditions of cable trays)
- Potentially adverse seismic interactions including those that could cause flooding, spray, and fires in the area
- Other housekeeping items that could cause adverse seismic interaction (including temporary installations and equipment storage)
- Scaffold construction was inspected for adequate bracing and anchorage
- Hazards from temporary equipment were evaluated and overall seismic housekeeping was evaluated

The Area Walk-Bys are intended to identify adverse seismic conditions that are readily identified by visual inspection, without necessarily stopping to open cabinets or taking an extended look. If a potentially adverse seismic condition was identified during the Area Walk-By, then additional time was taken, as necessary, to evaluate adequately whether there was an adverse condition and to document any findings.

The results of the Area Walk-Bys are documented on the AWCs included in Appendix D of this report. A separate AWC was filled out for each area inspected. A single AWC was completed for areas where more than one SWEL item was located. New AWCs were completed for areas previously inspected that included deferred items.

Additional details for evaluating the potential for adverse seismic interactions that could cause flooding, spray, or fire in the area are provided in the following two subsections.

Seismically-Induced Flooding/Spray Interactions

Seismically-induced flooding/spray interactions are the effect of possible ruptures of vessels or piping systems that could spray, flood or cascade water into the area where SWEL items are located. This type of seismic interaction was considered during the IPEEE program. Those prior evaluations were considered, as applicable, as information for the Area Walk-Bys.

One area of particular concern to the industry is threaded fire protection piping with long unsupported spans. If adequate seismic supports are present or there are isolation valves near the tanks or charging sources, flooding may not be a concern. Numerous failures have been observed in past earthquakes resulting from sprinkler head impact. Less frequent but commonly observed failures have occurred due to flexible headers and stiff branch pipes, non-ductile mechanical couplings, seismic anchor motion and failed supports.

Examples where seismically-induced flooding/spray interactions could occur include the following:

- Fire protection piping with inadequate clearance around fusible-link sprinkler heads
- Non-ductile mechanical and threaded piping couplings can fail and lead to flooding or spray of equipment
- Long, unsupported spans of threaded fire protection piping
- Flexible headers with stiffly supported branch lines
- Non-Seismic Category I tanks

The SWEs exercised their judgment to identify only those seismically-induced interactions that could lead to flooding or spray. Fire protection piping at Turkey Point Unit 4 was found to be sufficiently restrained in areas where SC-I equipment items are located and no concerns were identified with fire protection piping.

One potential seismic-induced spray interaction was identified at Turkey Point Unit 4 during the Initial Seismic Walkdowns, and included as an issue to be resolved. This is related to the E16A AHU discussed in Section 5.2.

Seismically-Induced Fire Interactions

Seismically-induced fire interactions can occur when equipment or systems containing hazardous/flammable material fail or rupture. Examples where seismically-induced fire interactions could occur include the following:

- Hazardous/flammable material stored in inadequately anchored drums, inadequately anchored shelves, or unlocked cabinets
- Natural gas lines and their attachment to equipment or buildings
- Bottles containing acetylene or similar flammable chemicals
- Hydrogen lines and bottles

Another example where seismically-induced fire interaction could occur is when there is relative motion between a high voltage item of equipment (e.g., 4160 volt transformer) and an adjacent support structure when they have different foundations. This relative motion can cause high voltage busbars, which pass between the two, to short out against the grounded bus duct surrounding the busbars and cause a fire.

The Seismic Walkdown Engineers exercised their judgment to identify only those seismically-induced interactions that could lead to fires. No potential seismic-fire interactions were identified for Turkey Point Unit 4.

Area Walk-By Results

Table 5-3 provides a summary of issues identified during the Area Walkdowns and recorded on AWCs. The tracking of issue resolution is identified in the table. Items are grouped based on the walkdown issue cited:

- Seismic housekeeping issues
- Other seismic interaction issues
- Other conditions

The majority of potentially adverse conditions found are related to seismic housekeeping. Potential seismic interaction concerns were identified but none of the issues were considered to be significant immediate hazards.

Revision 2 of this Report provides an update on the status for the items that were entered into the Corrective Action Program during the initial Seismic Walkdowns (Revision 1).

No additional items were entered into Table 5-3 after completion of the supplementary walkdowns under Revision 2 of this report,

Table 5-3: Table of Actions Resulting from Area Walk-by Inspections

Area	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status
<i>Seismic Housekeeping Issues</i>				
Area 223 SPENT FUEL PIT PUMP/HEAT EXCHANGER ROOM	Hand wheel for valve 4-913 is within 1/8" of an adjacent line. Temporary light is hooked to an instrument air line on the east side of the heat exchanger. Scaffolding above 4-816B is not adequately braced in the east-west direction.	The hazard to valve functionality is judged to be low. Verify valve ruggedness for impact load OR increase clearance to an acceptable level. Heat exchanger is considered a rigid component and interaction with temp light risk is low.	Yes	Temporary lighting and the scaffolding in the room have been removed.
Area 310C - CABLE SPREADING ROOM, MECH.EQ ROOM	Loose cover panels leaning against wall in front of air handlers. Potential to fall on piping and conduit.	No soft targets are vulnerable. This is a seismic housekeeping issue. Condition was not considered to be an immediate hazard. Take actions to ensure existing seismic housekeeping procedures are followed.	YES	Loose cover panels have been removed from area.
Area 360 CONTROL ROOM	Unrestrained "Man-Machine Interface" cart on wheels (see photo) is close to Rack No 14, "Protection Ch. Set III". This is potential relay chatter concern.	This is a seismic housekeeping issue. Potential relay chatter issue is undesirable but the overall plant hazard related to relay chatter is typically low as previously discussed. Take actions to ensure existing seismic housekeeping procedures are followed.	YES	Cart has been removed from area.

Table 5-3: Table of Actions Resulting from Area Walk-by Inspections

Area	Potentially Adverse Seismic Condition	Resolution	Entered into CAP	Current Status
Area 425 - EMERGENCY DIESEL 4A AIR START AREA.	12' ladder on wall behind air tanks is stowed but can slide on brackets and also swing. Ladder can hit tubing line near RV-4-1456A.	Remove OR restrain the ladder. Take actions to ensure existing seismic housekeeping procedures are followed.	Yes	Ladder has been removed from area.
<i>Other seismic interaction issues</i>				
Area 310C - CABLE SPREADING ROOM, MECH. EQ. ROOM	Rod hung copper tubing ("Service Water" tag seen) appears to be non-seismic. Appears to be a spray hazard. This issue is tracked under component E16A.	Operability of unit confirmed by prompt operability determination (POD). The impact of spray was evaluated and it would not adversely affect the function of the air handler. An additional AR was written to address this specific condition and to review adverse effects, if any of the copper tubing on the functionality of the air handlers. The operability screening of the AR determined that the AHU remains Operable.	YES	Condition was further evaluated. Accepted As-Is due to minimum risk. No field work required.
<i>Other conditions</i>				
Area 203 CONTAINMENT SPRAY PUMP ROOM	Two bent hanger rods above MOV-4-843B.	Condition was not considered to be an immediate hazard. Evaluate hanger rods for strength.	Yes	Condition has been evaluated. Rods replacement activity is being assembled.

6

Licensing Basis Evaluations

Potentially adverse conditions identified during the walkdowns were documented on the seismic walkdown and area walk-by checklists, as appropriate, and entered into the corrective action process. For those conditions that required a seismic licensing basis evaluation, an operability screening has been performed and an evaluation will be performed to provide the final resolution to be documented within the corresponding condition reports. Table 5-2 and 5-3 of this report provide the status of the subject evaluations as applicable.

Revision 2 of this report provides an update on the status for the items that were entered into the Corrective Action Program during the initial Seismic Walkdowns (Revision 1). There are no outstanding operability or functionality issues as of revision 2 of this report.

7

IPEEE Vulnerabilities Resolution Report

As discussed in previously Section 2.3, for implementation of the IPEEE Turkey Point was classified as a “reduced scope” plant per NUREG-1407 (Ref. 10). As such, the review level earthquake was equal to the site SSE and completion of the USI A-46 assessment largely satisfied the seismic IPEEE requirements.

In lieu of a full IPEEE seismic analysis, FPL opted to submit a “scaled back” program to resolve USI A-46 and Generic Letter 87-02 as allowed by the NRC in a letter dated November 4, 1998 (Ref. 13) issued for the review of Turkey Point IPEEE evaluations. The final results of this scaled back program for the A-46 program were submitted in a letter to the NRC, L-93-155, “Final Report of Plant Specific Seismic Adequacy Evaluation of Turkey Point Units 3 and 4 to Resolved USI A-46 and GL 87-02” (Ref. 14). The components selected for this analysis were also included in the SWEL in order to verify no outlier issues persisted. The actions taken for USI A-46 outlier resolution in Unit 04 are summarized in Table 7-1.

Table 7-1: USI A-46 Outlier Resolution

No.	Equip Class	Equip ID	Name	Outlier Issue	SRT Recommended Resolution	Status
5	6	4P9B	4B Intake Cooling Water Pump	Pump shaft length longer than can be screened by SSRAP report.	Evaluate Shaft for adequate length and clearance.	Drawing 5614-C-1646 issued As-Built for PC/M 88-330 on 12/17/92 Ref: (Drawing 5610-C-61 Sht 1)
6	6	4P9B	4B Intake Cooling Water Pump	Cast iron fittings on pump.	Check stresses on fittings from loads of attached piping.	Drawing 5614-C-1646 issued As-Built for PC/M 88-330 on 12/17/92. Ref: (Drawing 5610-C-61 Sht 1)
7	6	4P9B	4B Intake Cooling Water Pump	Anchorage needs verification.	Verify anchorage with calculation.	Anchorage adequate per REA-TPN- 88-320, foundation repair and anchorage replacement.
8	6	4P9B	4B Intake Cooling Water Pump	Interaction – Fossil Unit Stack may fall.	Check adequacy of fossil stack.	Fossil stack adequate per FPL Safety Evaluation.
13	21	4T8	U4 Condensate Storage Tank	Anchorage adequacy.	Replace chair plates with 1 ¼" thick plates and evaluate further.	Chair plates upgraded per PCM 91-171 on 01/05/93.
15	21	4T1	U4 Refueling Water Storage Tank	Anchorage adequacy.	Replace chair plates with 1 ¼" thick plates and evaluate further.	Chair plates upgraded per PCM 91-173 on 01/05/93.
18	21	4T218	U4 Component Cooling Water Surge Tank	Platform adequacy.	Check platform adequacy, and upgrade if required.	Platform to be upgraded per PCM 90-472 on 07/16/91.
22	5	4B06	4B 480V Motor Control Center	No anchorage.	Add anchorage.	Anchorage upgraded per PCM 91-179 on 06/02/94.
25	5	4AB	4B 4.16kV Switchgear	No anchorage.	Add anchorage.	Anchorage upgraded per PCM 91-175 on 05/01/93.
28	5	4B02	4B 480V HVPDS Load Center (Includes Transformer)	No anchorage.	Add anchorage.	New load center installed per PCM 89-533 and new anchorage installed per PCM 91-177 on 05/01/93.
29	5	4B04	4D 480V HVPDS Load Center (Includes Transformer)	No anchorage.	Add anchorage.	New load center installed per PCM 89-533 and new anchorage installed per PCM 91-177 on 05/21/93.

Table 7-1: USI A-46 Outlier Resolution

No.	Equip Class	Equip ID	Name	Outlier Issue	SRT Recommended Resolution	Status
36	15	4D24	Battery Rack 4B	No spacers on east end of battery rack.	Add spacers on east end of battery rack.	Spacers added (ref. FPL letters JPN-PTN-92-5261 and 5707).
37	15	4D24	Battery Rack 4B	Shade on lights may fail and fall on batteries.	Add tie wire to lights.	Tie wires added per PCM 91-183 on 07/08/93.
38	15	4D24	Battery Rack 4B	Block walls not evaluated by SRT.	Verify block wall included in FPL IE 80-11 program.	FPL verified wall included in IE 80-11 program as block walls C30-2, C30-3, C30-4.
39	15	4D03	Battery Rack 4A	No spacers on east end of battery rack.	Add spacers on east end of battery rack.	Spacers added (ref. FPL letters JPN-PTN-92-5261 and 5707).
40	15	4D03	Battery Rack 4A	Shade on lights may fail and fall on batteries.	Add tie wire to lights.	Tie wires added per PCM 91-182 on 07/08/93.
41	15	4D03	Battery Rack 4A	Block walls not evaluated by SRT.	Verify block wall included in FPL IE 80-11 program.	FPL verified wall included in IE 80-11 program as block walls A42-2, C42-15, C42-16, C42-18.
43	14	4D01	4B Distribution Panels/Bus	Three loose anchor bolts.	Tighten loose bolt.	Bolt disposition per PWO 93-010844.
45	20	4C23A	4A Sequencer	Additional top bracket as found for sequencer 3A would provide added assurance and strength. This item had only one bracket.	Add two top brackets as found for sequencer 3A.	Bracket added per PCM 91-181 on 05/01/93.
46	20	4C23B	4B Sequencer	Additional top bracket as found for sequencer 3A would provide added assurance and strength. This item had only one bracket.	Add two top brackets as found for sequencer 3A.	Bracket added per PCM 91-181 on 05/01/93.
48	21	4E207B	4B CCW Heat Exchanger	SRT could not verify reinforcement steel design of pedestal.	Verify adequacy of pedestal design.	FPL verified pedestal adequacy by similarity with Item 53.

Table 7-1: USI A-46 Outlier Resolution

No.	Equip Class	Equip ID	Name	Outlier Issue	SRT Recommended Resolution	Status
50	20	4C06	4B Vertical Panel	Interaction metal egg crate ceiling may fall on operators.	Clip in metal egg crate sections of ceiling.	Currently light weight plastic egg crate is installed.

8

Peer Review Report

The *Peer Review Report* is included as Appendix F. This includes the peer review of the SWEL selection, peer review of the seismic walkdown, and peer review of this final report.

9

References

1. EPRI Technical Report 1025286, *Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic*, dated June 2012.
2. Turkey Point Updated Final Safety Analysis Report (UFSAR): Section 1, Section 2, and Section 5.
3. Not used.
4. AEC Publication TID 7024, "Nuclear Reactors and Earthquakes", August 1963.
5. ACI 318-63, Building Code Requirements for Reinforced Concrete.
6. AISC, "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings", adopted April 17, 1963.
7. USNRC, "Verification Of Seismic Adequacy Of Mechanical And Electrical Equipment In Operating Reactors, Unresolved Safety Issue (USI) A-46", Generic Letter 87-02.
8. USNRC, "Individual Plant Examination of External Events-(IPEEE) for Severe Accident Vulnerabilities", Generic Letter 88-20, Supplement 4.
9. Stevenson & Associates report, "Plant Specific Seismic Adequacy Evaluation of Turkey Point Units 3 & 4 to Resolve Unresolved Safety Issue (USI) A-46 and Generic Letter (GL) 87-02," dated April 30, 1993.
10. USNRC, "Procedural and Submittal Guidance for the IPEEE for Severe Accident Vulnerabilities", NUREG-1407, June, 1991.
11. FPL Letter L-92-222, "Individual Plant Examination of External Events (IPEEE)," letter to USNRC, August 31, 1992.
12. NRC (E Leeds and M Johnson) Letter to All Power Reactor Licensees et al., "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," Enclosure 2.3, "Recommendation 2.3: Seismic," dated March 12, 2012
13. NRC Letter to FPL, "Generic Letter 88-20, Supplement 4, -Individual Plant Examination For External Events For Severe Accident Vulnerabilities- Turkey Point Nuclear Plant. Units 3 And 4", dated November 4, 1998.
14. FPL Letter L-93-155, "Final Report of Plant Specific Seismic Adequacy Evaluation of Turkey Point Units 3 and 4 to Resolved USI A-46 and GL 87-02".
15. FPL Letter L-2012-416, "Response to NRC 10 CFR 50.54(f) Request for Information Regarding Near-Term Task Force Recommendation 2.3, Seismic.

A

Project Personnel Resumes and SWE Certificates

A.1 INTRODUCTION

Resumes for the following personnel that contributed to the seismic walkdown and/or peer review are included in this Appendix:

- FPL: C. Figueroa, T. Satyan-Sharma, A. Restrepo, George Tullidge, T. Jones
- Stevenson & Associates: J. O'Sullivan, S. Baker

In addition, certificates from the EPRI Walkdown Training Course are included for each of the designated SWEs: C. Figueroa, T. Satyan-Sharma, J. O'Sullivan and S. Baker.

A.2 RESUMES

Carlos Andres Figueroa

Mr. Figueroa is a Mechanical and Civil Design Engineer I in the Turkey Point Nuclear Station at Florida Power & Light. He has one year of Mechanical Systems Engineering experience at Entergy's River Bend Station in St. Francisville, LA. Mr. Figueroa also has three years of Operations experience and four years of Civil Design Engineering experience at FPL's Turkey Point Station in South Florida. He holds a BS in Mechanical Engineering from the University of Los Andes (Bogota, Colombia) and a MS in Mechanical Engineering, from the University of Florida. He completed Training on the Near Term task Force Recommendation 2.3 – Plant Seismic Walkdowns.

T. Satyan-Sharma, P.E.

Mr. Satyan Sharma is a Consultant to Florida Power and Light for Turkey Point Station. He has managed and was the technical lead for the SQUG Project at a Nuclear Utility. He was a Peer Reviewer on the SQUG project at other Nuclear Plants and provided third party reviews. Mr. Satyan Sharma has 40 years of experience in Nuclear Industry in both Consulting (6 years) and Utility (34 years) supporting plant operations. Mr. Satyan Sharma has a Master of Science in Structural/Engineering Mechanics from New York University. He was a member of the SQUG Team in the development of the Generic Implementation Procedures (GIP). He has received industry training as Seismic Capability Engineer (EPRI 5-Day Training), SQUG New and Replacement Equipment and Parts (NARE) Training, and SQUG Equipment Selection & Relay Evaluation Training.

Alexander Restrepo

Mr. Restrepo is an Engineer I in the PRA Group at NextEra Energy, working primarily on Turkey Point Nuclear Station. He has three years of Operations experience at Turkey Point and two years of PRA experience. He has completed the necessary requirements and qualifications for a PRA engineer. Recently he completed Training on the Near Term task Force Recommendation 2.3 – Plant Seismic Walkdowns. He holds a BS and MS in Nuclear Engineering, both from the University of Florida.

George Tullidge

Mr. Tullidge is a Staff Engineer in the PRA Group at NextEra Energy Juno Beach office. He has over 30 years of commercial nuclear power experience. Mr. Tullidge has a degree in Physics from Pennsylvania State University. His years of experience include Operations, Maintenance, and Engineering. He also held an active Senior Reactor Operator license at St. Lucie and was a qualified Operations Shift Manager.

Tim Jones

Mr. Jones is an Operations Department Shift Manager at Turkey Point Nuclear. He has over 26 years of experience in the Operations Department and was licensed in 1994 as Reactor Operator. He received his SRO license in 1998. His years of experience include Operations, Maintenance, and Security.

John J. O’Sullivan, P.E.

Mr. O’Sullivan is a Senior Consultant in the S&A Boston office. He has managed and led seismic walkdowns and fragility analyses of structures and components for use in probabilistic risk assessments. Mr. O’Sullivan has 24 years of seismic experience serving the nuclear industry. Mr. O’Sullivan has participated in more than 10 USI A-46 and IPEEE projects in response to the requirements of Generic Letters 87-02 and 88-20. Mr. O’Sullivan has a Master of Science in Structural Engineering from the Massachusetts Institute of Technology. He has received industry training as Seismic Capability Engineer (EPRI 5-day SQUG training), EPRI IPEEE Add-on, and Seismic Fragility training.

Seth Baker

Mr. Baker is a Senior Engineer in the S&A Boston office. He has performed structural engineering analysis & design, finite element analysis, structural mechanics evaluations, seismic qualification managed and seismic walkdowns. Mr. Baker has a Master of Science in Civil/Structural Engineering from Stanford University. He completed the EPRI training for NTTF 2.3 plant seismic walkdowns.

A.3 CERTIFICATES

EPR| SPECIFIC POWER
RESEARCH INSTITUTE

Certificate of Completion

Carlos Figueroa

**Training on Near Term Task Force
Recommendation 2.3
- Plant Seismic Walkdowns**

July 27, 2012

Date

R.P. Kassawara

Robert K. Kassawara
EPRI Manager,
Structural Reliability & Integrity



Presents this

Certificate of Achievement

To Certify That

Tirumani Satyan-Sharma

has Completed the SQUG Walkdown Screening
and Seismic Evaluation Training Course

Held June 17-22, 1992



David A. Freed, MPR Associates
SQUG Training Coordinator

Neil P. Smith, Commonwealth Edison
SQUG Chairman

Robert P. Kassawara, EPRI
SQUG Program Manager



Presents this

Certificate of Achievement

To Certify That

John O'Sullivan

has Completed the SQUG Walkdown Screening
and Seismic Evaluation Training Course

Held August 10-15, 1992



David A. Freed, MPR Associates
SQUG Training Coordinator

Neil P. Smith, Commonwealth Edison
SQUG Chairman

Robert P. Kassawara, EPRI
SQUG Program Manager

Certificate of Completion

Seth Baker

Successfully Completed

Training on Near Term Task Force
Recommendation 2.3 – Plant Seismic Walkdowns


Bruce M. Lory, Instructor
NTTF 2.3 Seismic Walkdown Course

Date: 06/26/12

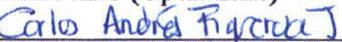
B SWEL Selection Report



Florida Power & Light

Selection of the Seismic Walkdown Equipment List (SWEL) for the Requirement 2.3 Walkdown

Turkey Point Nuclear Station

Prepared by		10/26/12
	Alexander Restrepo (PRA Group)	Date
Reviewed by		10/26/12
	George Tullidge (PRA Group)	Date
Reviewed by		11/1/12
	Tim Jones (Operations)	Date
Reviewed by		11/1/12
	Carlos Figueroa (Engineering)	Date

1 Introduction

This document contains the information used to develop the Seismic Walkdown Equipment List (SWEL) at Turkey Point (PTN) in accordance with EPRI Report 1025286, "Seismic Walkdown Guidance," dated June 2012 [1].

The selection process was completed by applying separate screening criteria to develop SWELs 1 and 2. The documentation is laid out by first providing the screening criteria requirements, and then providing the implementation of how PTN applied that screening criteria.

2 Process

The general process focused first on building a Master Component List, with attributes to support the sample selection process (Sections 3 and 4). This list was obtained by generating a NAMS query of the entire PTN Equipment Database for all components along with data such as system code, component type, location, etc. Then the screening criteria below were applied to arrive at a final SWEL 1 and SWEL 2 comprised of about 92 items and 8 items, respectively.

The process also included identifying a set of plant locations around which the walkdown was organized (Section 5). The plant locations were also used to support the "walk-by" process to assess cable trays and ventilation ducts and the potential for seismic spatial interactions (Section 6).

Finally, Section 6 identifies several evaluations that supported the identification of targets for the walkdown and the specific attributes that needed to be examined.

Because the SWEL needs to address a number of attributes, the selection was performed and reviewed by a team that includes representatives from PRA, Operations, and Engineering. This was done systematically by performing table-top virtual walkdowns and pre-walkdowns of each location to identify candidates for the SWEL as well as other issues (e.g., seismic-flood) that needed to be inspected by the walk-by.

3 SWEL 1 Screening Criteria

The final SWEL 1 is contained in the Microsoft Excel workbook, "U3 (U4) PTN Fukushima SWEL" [2], in the "SWEL 1" spreadsheet on file. Each iteration of the screening process described below is contained in the Microsoft Access database, "SWEL 1"[3]. These final SWEL (both SWEL 01 & SWEL 02), as well as the Master Component List, are available in Excel format on file at Turkey Point.

3.1 Screening Criteria 1 – Seismic Category 1

Requirement

The scope of SSCs (Systems, Structures, and Components) in the plant are limited to those that are designed to Seismic Category (SC) I requirements. This is done because only such items have a defined seismic licensing basis against which to evaluate the as-installed configuration.

Selecting these items is intended to comply with the request in the NRC 50.54(f) Letter, under the “Requested Actions” section, to “verify current plant configuration with the current license basis.”

Application

Seismic Class 1 SSCs include over 20,000 items in the PTN equipment database. A complete equipment list from the PTN equipment database was obtained via a NAMS query ran in June 2012. The Seismic Class 1 SSCs were queried from the report by choosing only those SSCs where the Seismic Class was designated with an I.

3.2 Screening Criteria 2 – Equipment or Systems

Requirement

The scope of SSCs included selecting only those that do not regularly undergo inspections to confirm that their configuration continues to be consistent with the plant licensing basis. Cable/conduit raceways and HVAC ductwork were not included as “equipment” in the SWEL 1, and were instead left to be reviewed during area walk-bys of the spaces containing items on the SWEL 1. Also omitted were SC 1 structures, containment penetrations, and SC1 piping systems.

Application

The list of all SC1 SSCs was further reduced by including only “active” components, removing all items classified as “design” or “non-equip”.

3.3 Screening Criteria 3 – Supports 5 Safety Functions

Requirement

The scope of SSCs to be included in SWEL 1, are those SSCs associated with maintaining the five safety functions. These five safety functions include the four safe shutdown functions (reactor reactivity control, reactor coolant pressure control, reactor coolant inventory control, and decay heat removal, which includes the Ultimate Heat Sink), plus the containment functions.

Application

Since the PRA risk model represents the five safety functions listed above, a list of all PRA component tags was compared to the remaining SSCs. Items not included in the PRA model were removed.

3.4 Screening Criteria 4 – Sample Considerations

Requirement

It was expected that SWEL 1, taken as a whole, would include representative items from some of the variations within each of the following five attributes:

- A variety of types of systems
- Major new and replacement equipment
- A variety of types of equipment
- A variety of environments
- Equipment enhanced due to vulnerabilities identified during the IPEEE program

Application

The seismic aspects of the PTN IPEEE were resolved by the use of the FPL site-specific Seismic Program associated with Unresolved Safety Issue (USI) A-46 [4]. The equipment analyzed in this program was used as a base and compared to the screening criteria above. The remaining components in the Master Component List were reordered according to system code, component type, and then location in order to obtain a broad sample. Operations personnel were consulted with to identify new or replaced equipment that were on the truncated Master Component List.

4 SWEL 2 Screening Criteria

SWEL 2 began with the same Master Component List as SWEL 1. An initial screening was done retaining only SSCs related to the Spent Fuel Pool system. Screening criteria 1, 2, and 3 for SWEL 2 were performed identically to that of screening criteria 1, 2, and 4 for SWEL 1, respectively. The final SWEL 2 is contained in the Microsoft Excel workbook, "U3 (U4) PTN Fukushima SWEL" [2], in the "SWEL 2" spreadsheet on file. Each iteration of the screening process is contained in the Access database, "SWEL 2" [5]. These Microsoft Excel Workbooks, as well as the Master Component List are available in Excel format on file at Turkey Point.

4.1 Screening Criteria 4 – Cause Rapid Drain-Down

Requirement

The EPRI guidance requires assessment of the potential for Spent Fuel Pool (SFP) rapid draindown, specifically the identification of SFP penetrations below about 10 feet above the top of the fuel assemblies.

Application

There are only two penetrations in the SFP below this level. One is a lower suction valve (*-797), the other is the fuel transfer tube, used to move fuel from containment to the SFP. During normal operation, this tube is isolated by a blind flange on the containment side and a manual valve on the Fuel Storage Building side. Other components were included in this screening based on their importance in maintaining spent fuel pool inventory and cooling.

5 Walk-By Table

Each location will also be subject to a walk-by, an examination (in less detail) of the other PRA components, as well as an inspection for other seismic issues:

- Several other passive component types: cable trays & ventilation ducts.
- Seismic-induced fire. This includes all flammable materials in each location such as hydrogen lines, gas bottles (acetylene, hydrogen), natural gas lines, and hazardous/flammable material stored in the location.
- Seismic-induced flood. This includes all flood/spray sources (tanks, piping) originating in each location, based on the Internal Flood PRA. Note, the flood sources of interest are only those originating in the location, not those coming from another location. The potential for flood propagation will be addressed in the seismic/flood analysis.
- Spatial interactions (2 / 1). This includes adverse physical interaction due to proximity, failing of other components or structures (e.g., cranes), and flexibility of attached lines and cables.

The final Walk-By Table is contained in the Microsoft Excel workbook, "U3 PTN Fukushima SWEL" [2], in the "Walkby Table" spreadsheet as well as the Master Component List are available in Excel format at Turkey Point on file.

6 Evaluations

The following evaluations were performed prior to and during the walkdown to assess specific issues that may add to the walkdown scope or the inspection criteria.

6.1 IPEEE or USI A-46 Vulnerabilities

The seismic assessment performed for PTN USI A-46 was reviewed for any seismic vulnerability identified. These issues were included in the SWEL table.

6.2 Configuration Verification

The EPRI guidance identifies two types of inspection for the walkdown: (a) visual inspection and (b) configuration verification. Visual inspection is typically what is performed in a walkdown, looking for obvious degraded conditions in equipment anchorage. However, configuration verification is a more involved inspection consistent with the existing plant documentation of the design basis. This is required in at least 50% of the SWEL items with anchorage. Since 28 SWEL components are MOVs (Class 8) or AOVs (or similar Class 7 components) which do not have anchorage, this leaves 50% of 72, or at least 36 components to be included in the configuration verification. For those components, the design basis was reviewed and the key attributes included in the walkdown forms to assist the inspection.

6.3 New Equipment

The EPRI Guidance directs that the SWEL should include a “robust sampling of the major new or replacement equipment installed within the past 15 years (i.e., since the approximate completion of the seismic IPEEE evaluation)”. Based on discussion with Operations and Engineering, major new or replacement equipment was identified and noted as such in the SWEL spreadsheet.

6.4 Modifications

The walkdown team allowed for changes to be made to the SWEL mid-walkdown. Many components were changed from ‘B’ train to ‘A’ train as the former was the protected train, precluding the thorough inspection of some components. Various items were also replaced or removed because they were common components already on the other unit’s SWEL or the component was no longer installed in the plant.

7 References

1. “Final Report of Plant Specific Adequacy Evaluation of Turkey Point Units 3 and 4 to Resolve Unresolved Safety issue (USI) A-46 and Generic Letter (GL) 87-02,” Stevenson & Associates, April 1993.
2. “PTN Fukushima SWEL,” FPL, August 2012.
3. “SWEL 1,” FPL, August 2012.
4. EPRI TR-1025286, “Seismic Walkdown Guidance,” June 2012.
5. “SWEL 2,” FPL, August 2012.

C

Seismic Walkdown Checklists (SWCs)

**Table C-1. Summary of Seismic Walkdown Checklists (Supplemental Walkdowns Only)
(See revision 1 for Initial Walkdown Checklists)**

- Anchorage Configuration Confirmation Performed

Tag ID	Component Description	Area	Equip. Class	Page
## 4B02	4B02 480V HVPDS LOAD CENTER 4B (CABINET)	341 - 480V LC ROOM	2	54
## 4B04	4D LC (Part of B train) (CABINET)	341 - 480V LC ROOM	2	56
## 4AB	4AB 4.16V SWITCHGEAR 4B (CABINET)	368 - 4160V SWITCHGEAR ROOM	3	57
4AD	4.16KV SWITCHGEAR 4AD FOR BUS 4D	430 - SWITCHGEAR ROOM 4D	3	60
PCV-4-4885	PRZR PORV N2 BACKUP SUPPLY PRESSURE REGULATOR	123 - CONTAINMENT 58 FOOT ELEVATION	7	81
SV-4-455C	PRESSURIZER PORV SOLENOID VALVE	103 - PRESSURIZER CUBICLE	7	83
MOV-4-535	PRESSURIZER PORV BLOCK VALVE	103 - PRESSURIZER CUBICLE	8	73
MOV-4-744A	RHR LO HEAD SI TO LOOP A MOTOR OPERATED VLV	121 - CONTAINMENT 14 FOOT ELEVATION OUTSIDE BIO-WALL	8	75
MOV-4-751	NORMAL RHR INLET FROM RCS MOTOR OPERATED VLV	121 - CONTAINMENT 14 FOOT ELEVATION OUTSIDE BIO-WALL	8	77
MOV-4-865A	SI ACCUM A DISCH MOTOR OPERATED VLV	121 - CONTAINMENT 14 FOOT ELEVATION OUTSIDE BIO-WALL	8	79
## 4D23	4D23 (DISTRIBUTION PANEL)	347 - CONTROL ROOM INVERTER ROOM	14	62
## 4D02	4B1 BATTERY CHARGER	310 - CABLE SPREADING ROOM	16	63
## 4Y05	STATIC INVERTER 4C 125 VDC/120 VAC 7.5 KVA (CABINET)	347 - CONTROL ROOM INVERTER ROOM	16	66
4Y07	STATIC INVERTER 4D 125 VDC/120 VAC 7.5 KVA (CABINET)	347 - CONTROL ROOM INVERTER ROOM	16	68
TW-4-412C	DELTA T-TAVG CH I COLD LEG 1 THERMOWELL	104 - RCP A CUBICLE	19	85
## 4T229B	SI ACCUM B	114 - ACCUMULATOR B AREA	21	69
4V30B	EMERGENCY CONTAINMENT COOLER B	123 - CONTAINMENT 58 FOOT ELEVATION	21	71

Note: Detailed signed records of the checklists are available at the site.

Per the EPRI guidance document, the top row of each checklist summarizes the status as follows:

Status	Meaning
Y	All relevant checks were answered Yes and no further action is required.
N	At least one check was answered No and follow-up is required.
U	At least one check could not be answered due to unavailable information and follow-up is required.

Section 5.2.5 of this report identifies planned actions for items requiring follow-up.

Class (02) Low Voltage Switchgear
4B02 SWC

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4B02

Equipment Class: (2) Low Voltage Switchgear

Equipment Description: 4B02 480V HVPDS LOAD CENTER 4B (CABINET)

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 30.00 ft, 341

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Yes

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes

5. Is the anchorage configuration consistent with plant documentation? Yes
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)
*Confirmed welds to embedment front and rear; matches 5614-C-1789.
No shims installed.*

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4B02
Equipment Class: (2) Low Voltage Switchgear
Equipment Description: 4B02 480V HVPDS LOAD CENTER 4B (CABINET)

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes
Inspected exterior and interior of cabinet. No loose or missing hardware. Also opened 3 of 3 lower doors and found no loose or missing hardware

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns when none of the 3 lower doors were opened.

4B04 SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: 4B04
Equipment Class: (2) Low Voltage Switchgear
Equipment Description: 4D LC (Part of B train) (CABINET)
Project: Turkey Point 4 SWEL
Location (Bldg, Elev, Room/Area): Unit 4, 30.00 ft, 341
Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Yes

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes

5. Is the anchorage configuration consistent with plant documentation? Yes
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)
*See welds to embedment's front and rear; matches 5614-C-1789.
Shims installed in some locations.*

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4B04
Equipment Class: (2) Low Voltage Switchgear
Equipment Description: 4D LC (Part of B train) (CABINET)

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Yes
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Yes
There are masonry walls in the area. See AWC for comments.
9. Do attached lines have adequate flexibility to avoid damage? Yes
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Yes

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes
Inspected exterior of cabinets. No loose or missing hardware. Also opened 3 of 3 lower doors and found no loose or missing hardware.

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns when none of the 3 lower doors were opened.

Class (03) Medium Voltage Switchgear

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4AB

Equipment Class: (3) Medium Voltage Switchgear

Equipment Description: 4AB 4.16V SWITCHGEAR 4B (CABINET)

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 18.00 ft, 368

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Yes

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes

5. Is the anchorage configuration consistent with plant documentation? Yes
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)
Anchorage is consistent with drawing 5614-C-1791 Sh. 1 Rev. 0.

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4AB
Equipment Class: (3) Medium Voltage Switchgear
Equipment Description: 4AB 4.16V SWITCHGEAR 4B (CABINET)

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? No
Inspected exterior and interior of cabinet; no loose or missing hardware found.

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

4AD SWC

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4AD

Equipment Class: (3) Medium Voltage Switchgear

Equipment Description: 4.16KV SWITCHGEAR 4AD FOR BUS 4D

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 42.00 ft, 430

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? No

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes

5. Is the anchorage configuration consistent with plant documentation? Not Applicable
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4AD
Equipment Class: (3) Medium Voltage Switchgear
Equipment Description: 4.16KV SWITCHGEAR 4AD FOR BUS 4D

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? No
No loose hardware found.

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

4D23 SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: 4D23

Equipment Class: (14) Distribution Panels

Equipment Description: 4D23 (DISTRIBUTION PANEL)

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 42.00 ft, 347

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Yes

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes
See crack in floor at front of cabinet that has potential to moderately affect concrete expansion anchor strength. However, it does not pass through any anchor. Therefore, risk is minimal.
5. Is the anchorage configuration consistent with plant documentation? Yes
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)
Opened all panel doors, saw bolt heads and verified anchorage consistency with plant documentation. Calculation PTN-BFSC-13-1001, Rev. 0 (EC 279239).
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4D23
Equipment Class: (14) Distribution Panels
Equipment Description: 4D23 (DISTRIBUTION PANEL)

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Yes
About 1-1/2" clearance to wall plate behind cabinet. Judged to be acceptable for shake space.
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Yes
9. Do attached lines have adequate flexibility to avoid damage? Yes
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Yes

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes
Inspected interior and exterior of cabinet. No loose or missing hardware.

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Class (16) Inverters

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4D02

Equipment Class: (16) Inverters

Equipment Description: 4B1 BATTERY CHARGER

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 30.00 ft, 310

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Yes

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes

5. Is the anchorage configuration consistent with plant documentation? Yes
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)
Verified anchorage consistency with plant documentation. Calculation PTN-BFSC-13-1001, Rev. 0 (EC 279239).

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4D02
Equipment Class: (16) Inverters
Equipment Description: 4B1 BATTERY CHARGER

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Yes
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Yes
There are masonry walls in the area. See AWC for comments.
9. Do attached lines have adequate flexibility to avoid damage? Yes
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Yes

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes
Inspected exterior and interior of cabinet. No loose or missing hardware.

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

4Y05 SWC

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4Y05

Equipment Class: (16) Inverters

Equipment Description: STATIC INVERTER 4C 125 VDC/120 VAC 7.5 KVA

(CABINET)

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 42.00 ft, 347

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Yes

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes

Visual hairlines cracks in grout pad are present but judged to be of minor significance.

5. Is the anchorage configuration consistent with plant documentation? Yes
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)

Anchorage is (5) x 5/8 diameter CEA's. Anchorage did not match 5610-C-652 Sh. 2. A revision to this drawing has been issued under EC/DCR 278634.

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4Y05
Equipment Class: (16) Inverters
Equipment Description: STATIC INVERTER 4C 125 VDC/120 VAC 7.5 KVA (CABINET)

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Yes
There is a 1-1/2" gap between cabinet and handrail. Judged to be acceptable for shake space.
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Yes
There are masonry walls in the area. See AWC for comments.
9. Do attached lines have adequate flexibility to avoid damage? Yes
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Yes

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes
Inspected interior and exterior of cabinet. No loose or missing hardware.

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

4Y07 SWC

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4Y07

Equipment Class: (16) Inverters

STATIC INVERTER 4D 125 VDC/120 VAC 7.5 KVA

Equipment Description: (CABINET)

Project: Turkey Point 4 SWEL

Location (Bldg, Elev,
Room/Area): Unit 4, 42.00 ft, 347

Manufacturer/Model:

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? No

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes
Visual crack is present at front but judged to be of minor significance.

5. Is the anchorage configuration consistent with plant documentation? Not Applicable
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: 4Y07
Equipment Class: (16) Inverters
Equipment Description: STATIC INVERTER 4D 125 VDC/120 VAC 7.5 KVA (CABINET)

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Yes
About 2-3/4" gap to wall. Judged to be acceptable for shake space. See AWC for scaffold comments.
8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Yes
9. Do attached lines have adequate flexibility to avoid damage? Yes
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Yes

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes
Inspected interior and exterior of cabinet. No loose or missing hardware.

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Class (21) Tanks and Heat Exchangers

4T229B SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: 4T229B

Equipment Class: (21) Tanks and Heat Exchangers

Equipment Description: SI ACCUM B

Project: Turkey Point 4 SWEL

Location (Bldg, Elev,
Room/Area): Unit 4, 58.00 ft, 114 (Inside Containment)

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Yes

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes

5. Is the anchorage configuration consistent with plant documentation? Yes
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)

Anchorage was verified against Dwgs. 5610-C-575, Rev. 2 and E-5610-M-4709, Rev. 4.

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: 4T229B

Equipment Class: (21) Tanks and Heat Exchangers

Equipment Description: SI ACCUM B

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Yes

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Yes

9. Do attached lines have adequate flexibility to avoid damage? Yes

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Yes

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

4V30B SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: 4V30B

Equipment Class: (21) Tanks and Heat Exchangers

Equipment Description: EMERGENCY CONTAINMENT COOLER B (Inside Containment)

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 58.00 ft, 123 (Inside Containment)

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? No

2. Is the anchorage free of bent, broken, missing or loose hardware? Yes

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Yes

4. Is the anchorage free of visible cracks in the concrete near the anchors? Yes

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

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

4V30B SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: 4V30B
Equipment Class: (21) Tanks and Heat Exchangers
Equipment Description: EMERGENCY CONTAINMENT COOLER B (Inside Containment)

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Class (8) Motor-Operated Solenoid-Operated Valves

MOV-4-535 SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: MOV-4-535

Equipment Class: (8) Motor-Operated and Solenoid-Operated Valves

Equipment Description: PRESSURIZER PORV BLOCK VALVE

Project: Turkey Point 4 SWEL

Location (Bldg, Elev,
Room/Area):

Unit 4, 58.00 ft, 103 (Inside Containment)

Manufacturer/Model:

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? **No**

2. Is the anchorage free of bent, broken, missing or loose hardware? **Not Applicable**

3. Is the anchorage free of corrosion that is more than mild surface oxidation? **Not Applicable**

4. Is the anchorage free of visible cracks in the concrete near the anchors? **Not Applicable**

5. Is the anchorage configuration consistent with plant documentation? **Not Applicable**
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: MOV-4-535

Equipment Class: (8) Motor-Operated and Solenoid-Operated Valves

Equipment Description: PRESSURIZER PORV BLOCK VALVE

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Yes

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Yes

9. Do attached lines have adequate flexibility to avoid damage? Yes

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Yes

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

MOV-4-744A SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: MOV-4-744A

Equipment Class: (8) Motor-Operated and Solenoid-Operated Valves

Equipment Description: RHR LO HEAD SI TO LOOP A MOTOR OPERATED VLV

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 14.00 ft, 121 (Inside Containment)

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? No

2. Is the anchorage free of bent, broken, missing or loose hardware? Not Applicable

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Not Applicable

4. Is the anchorage free of visible cracks in the concrete near the anchors? Not Applicable

5. Is the anchorage configuration consistent with plant documentation? Not Applicable
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: MOV-4-744A
Equipment Class: (8) Motor-Operated and Solenoid-Operated Valves
Equipment Description: RHR LO HEAD SI TO LOOP A MOTOR OPERATED VLV

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

MOV-4-751 SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: MOV-4-751
Equipment Class: (8) Motor-Operated and Solenoid-Operated Valves
Equipment Description: NORMAL RHR INLET FROM RCS MOTOR OPERATED VLV
Project: Turkey Point 4 SWEL
Location (Bldg, Elev, Room/Area): Unit 4, 14.00 ft, 121 (Inside Containment)
Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? No
2. Is the anchorage free of bent, broken, missing or loose hardware? Not Applicable
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Not Applicable
4. Is the anchorage free of visible cracks in the concrete near the anchors? Not Applicable
5. Is the anchorage configuration consistent with plant documentation? Not Applicable
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: MOV-4-751
Equipment Class: (8) Motor-Operated and Solenoid-Operated Valves
Equipment Description: NORMAL RHR INLET FROM RCS MOTOR OPERATED VLV

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

MOV-4-865A SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: MOV-4-865A

Equipment Class: (8) Motor-Operated and Solenoid-Operated Valves

Equipment Description: SI ACCUM A DISCH MOTOR OPERATED VLV

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 14.00 ft, 121 (Inside Containment)

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? No

2. Is the anchorage free of bent, broken, missing or loose hardware? Not Applicable

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Not Applicable

4. Is the anchorage free of visible cracks in the concrete near the anchors? Not Applicable

5. Is the anchorage configuration consistent with plant documentation? Not Applicable
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.)

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: MOV-4-865A
Equipment Class: (8) Motor-Operated and Solenoid-Operated Valves
Equipment Description: SI ACCUM A DISCH MOTOR OPERATED VLV

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? -

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Class (7) Fluid-Operated Valves

PCV-4-4885

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: PCV-4-4885

Equipment Class: (7) Fluid-Operated Valves

Equipment Description: PRZR PORV N2 BACKUP SUPPLY PRESSURE REGULATOR

Project: Turkey Point 4 SWEL

Location (Bldg, Elev,
Room/Area): Unit 4, 58.00 ft, 123 (Inside Containment)

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? | No |
| 2. | Is the anchorage free of bent, broken, missing or loose hardware? | Not Applicable |
| 3. | Is the anchorage free of corrosion that is more than mild surface oxidation? | Not Applicable |
| 4. | Is the anchorage free of visible cracks in the concrete near the anchors? | Not Applicable |
| 5. | Is the anchorage configuration consistent with plant documentation?
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.) | Not Applicable |

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: PCV-4-4885

Equipment Class: (7) Fluid-Operated Valves

Equipment Description: PRZR PORV N2 BACKUP SUPPLY PRESSURE REGULATOR

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Yes

8. Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? Yes

9. Do attached lines have adequate flexibility to avoid damage? Yes

10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Yes

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

SV-4-455C SWC

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: SV-4-455C

Equipment Class: (7) Fluid-Operated Valves

Equipment Description: PRESSURIZER PORV SOLENOID VALVE

Project: Turkey Point 4 SWEL

Location (Bldg, Elev, Room/Area): Unit 4, 58.00 ft, 103 (Inside Containment)

Manufacturer/Model: _____

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? No

2. Is the anchorage free of bent, broken, missing or loose hardware? Not Applicable

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Not Applicable

4. Is the anchorage free of visible cracks in the concrete near the anchors? Not Applicable

5. Is the anchorage configuration consistent with plant documentation?
(Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.) Not Applicable

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Yes

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: SV-4-455C

Equipment Class: (7) Fluid-Operated Valves

Equipment Description: PRESSURIZER PORV SOLENOID VALVE

Interaction Effects

- | | | |
|-----|--|------|
| 7. | Are soft targets free from impact by nearby equipment or structures? | Yes- |
| 8. | Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? | Yes- |
| 9. | Do attached lines have adequate flexibility to avoid damage? | Yes |
| 10. | Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? | Yes |

Other Adverse Conditions

- | | | |
|-----|--|-----|
| 11. | Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? | Yes |
|-----|--|-----|

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Class (19) Temperature Sensors

TW-4-412C SWC

Status:

Y N U

Seismic Walkdown Checklist (SWC)

Equipment ID No.: TW-4-412C

Equipment Class: (19) Temperature Sensors

Equipment Description: DELTA T-TAVG CH I COLD LEG 1 THERMOWELL

Project: Turkey Point 4 SWEL

Location (Bldg, Elev,
Room/Area):

Unit 4, 14.00 ft, 104 (Inside Containment)

Manufacturer/Model:

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 anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? | No |
| 2. | Is the anchorage free of bent, broken, missing or loose hardware? | Not Applicable |
| 3. | Is the anchorage free of corrosion that is more than mild surface oxidation? | Not Applicable |
| 4. | Is the anchorage free of visible cracks in the concrete near the anchors? | Not Applicable |
| 5. | Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which anchorage configuration verification is required.) | Not Applicable |
| 6. | Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? | Yes |

Status:
Seismic Walkdown Checklist (SWC)

Y N U

Equipment ID No.: TW-4-412C
Equipment Class: (19) Temperature Sensors
Equipment Description: DELTA T-TAVG CH I COLD LEG 1 THERMOWELL

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no adverse seismic conditions that could adversely affect the safety functions of the equipment? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns

D

Area Walk-By Checklists (AWCs)

**Table D-1. Summary of Area Walkdown Checklists (Supplemental Walkdowns Only)
(See revision 1 for Initial Walkdown Checklists)**

Area Walk-by	Description	ID	Page
Area 103	Area 103 – PRESSURIZER CUBICLE	MOV-4-535 SV-4-455C	88
Area 104	Area 104 – RCP A CUBICLE	TW-4-412C	90
Area 114	Area 114 – ACCUMULATOR B AREA	4T229B	92
Area 121	Area 121 – CONTAINMENT 14' EL OUTSIDE THE BIO-WALL	MOV-4-744A MOV-4-751 MOV-4-865A	94
Area 123	Area 123 – CONTAINMENT 58' EL	4V30B PCV-4-4885	96
Area 310B	Area 310B - CABLE SPREADING ROOM, AREA NEAR MG SET	4D02	98
Area 341	Area 341 - 480V LC ROOM	4B04 4B02	100
Area 347A	Area 347 - CONTROL ROOM INVERTER ROOM - U4 DC EQUIP ROOM	4D23 4Y07	102
Area 347B	Area 347 - CONTROL ROOM INVERTER ROOM - U3 DC EQUIP ROOM	4Y05	104
Area 368B	Area 368 - 4160 V SWITCHGEAR ROOM B	4AB	106
Area 430	Area 430 - SWITCHGEAR ROOM 4D	4AD	108

Note: Detailed signed records of the checklists are available at the site.

Per the EPRI guidance document, the top row of each checklist summarizes the status as follows:

Status	Meaning
Y	All relevant checks were answered Yes and no further action is required.
N	At least one check was answered No and follow-up is required.
U	At least one check could not be answered due to unavailable information and follow-up is required.

Section 5.3 of this report identifies planned actions for items requiring follow-up.

Area 103

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): . . . Pressurizer Cubicle / Area 103

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| | | |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| | | |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| | | |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| | | |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| | | |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Pressurizer Cubicle / Area 103

- | | | |
|----|--|-----|
| 7. | Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? | Yes |
| | | |
| 8. | Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? | Yes |

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Area 104

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): RCP A Cubicle / Area 104

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): RCP A Cubicle / Area 104

- | | | |
|------|--|-----|
| 7. | Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? | Yes |
|
 | | |
| 8. | Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? | Yes |

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Area 114

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Accumulator B / Area 114

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Accumulator B / Area 114

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? Yes

There are some temporary outage related scaffolding and equipment in the area; these items will be removed as part of the containment clean-up prior to restart.

8. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Area 121

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Containment 14' EL Outside the Bio-Wall / Area 121

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? Yes

2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? Yes

3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? Yes

4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? Yes

5. Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? Yes

6. Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? Yes

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Containment 14' EL Outside the Bio-Wall / Area 121

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? No

There are some outage related scaffolding in the area. These will be removed prior to start-up as part of the Containment clean-up.

8. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Area 123

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Containment 58' EL / Area 123

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Containment 58' EL / Area 123

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? Yes

Noted temporary outage scaffold and lighting. Equipment is out of service so no adverse seismic concern currently. These items will be removed prior to start-up as part of the Containment clean-up process.

8. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? Yes

Comments

This item was deferred for inspection due to unavailability for access during previous walkdowns.

Area 310B

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 310B

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)?
<i>Lights are stiff, won't hit cabinets.</i> | Yes |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 310B

- | | | |
|------|--|-----|
| 7. | Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? | Yes |
|
 | | |
| 8. | Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area?
<i>There are a masonry walls in the area. Per drawing 5160-C-1727, the walls are safety related and acceptable for design basis (wall C-30-3).</i> | Yes |

Comments

Initial walkdown by Team B

This Area was inspected again during the Supplemental Seismic Walkdowns

Area 341

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 341

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? Yes

 2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? Yes

 3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? Yes

 4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? Yes

 5. Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area?
No fire piping in the area. Yes

 6. Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? Yes
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 341

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? Yes
No issues.
8. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? Yes
There are a masonry walls in the area. Per drawing 5160-C-1729, the walls are safety related and acceptable for design basis (walls T-31-1B, -2B, -3B).
-

Comments

Initial walkdown by Team B

This Area was inspected again during the Supplemental Seismic Walkdowns

Area 347A

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 347A

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 347A

-
- | | | |
|------|---|-----|
| 7. | Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)?
<i>Scaffold in area found to be adequately braced and anchored.</i> | Yes |
|
 | | |
| 8. | Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area?
<i>There are masonry walls in the area. Per drawing 5160-C-1728, the walls are safety related and acceptable for design basis (walls A-42-1,-2,-3,-4; C-42-15,-16,-17,-18).</i> | Yes |

Comments

This Area was inspected again during the Supplemental Seismic Walkdowns

Area 347B

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 347B

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| | | |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| | | |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| | | |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| | | |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area?
<i>Domestic water supply to wall sink reviewed. Sink is supported by drain line. Judged not to be a spray hazard.</i> | Yes |
| | | |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 347B

-
- | | | |
|------|---|-----|
| 7. | Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? | Yes |
|
 | | |
| 8. | Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area?
<i>There are masonry walls in the area. Per drawing 5160-C-1728, the walls are safety related and acceptable for design basis (walls A-42-1,-2,-3,-4; C-42-15,-16,-17,-18).</i> | Yes |

Comments

This Area was inspected again during the Supplemental Seismic Walkdowns

Area 368B

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 368B

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area?
<i>No fire piping in the area.</i> | Yes |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 368B

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? Yes

Scaffold overhead seen to be well braced and anchored.

Loose breaker >31" from 4AB; based on large gap to equipment not a credible hazard.

8. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? Yes

There are a masonry walls in the area. Per drawing 5160-C-1730, the walls are safety related and acceptable for design basis (walls T-18-5A, -6A, -7A).

Comments

Initial walkdown by Team B

This Area was inspected again during the Supplemental Seismic Walkdowns

Area 430

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 430

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. 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.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)?
<i>Very little overhead.</i> | Yes |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)?
<i>Lights that are hung are well above equipment and not an impact hazard.</i> | Yes |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area?
<i>No fire piping in the area.</i> | Yes |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
-

Status:
Area Walk-By Checklist (AWC)

Y N U

Location (Bldg, Elev, Room/Area): Area 430

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)? Yes
Previously loose breaker in corner, 42" from 4AD has been secured. Large gap to equipment so not a credible hazard.
8. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? Yes

Comments

Initial walkdown by Team B

This Area was inspected again during the Supplemental Seismic Walkdowns

E

Plan for Future Seismic Walkdown of Inaccessible Equipment

This appendix identifies equipment that was partly or completely inaccessible for inspection during the walkdown. The tables below address three categories of equipment:

Table E-1	Item was completely inaccessible due to radiological, safety or other issues. Area corresponding to the item was also inaccessible.
Table E-2	Anchorage of item was internal and team was denied permission to open due to personnel hazard or hazard to plant operation.
Table E-3	Status of inspections of electrical cabinet for "Other Adverse Conditions" under SWC Check 11. For some cabinets, inspection did not include all compartments/sections because of safety concerns or hazard to plant operation.

The inspections for Turkey Point Unit 4 deferred components and inaccessible components will be performed prior to the end of the first quarter in 2013 which falls within the window of the next refueling outage. An action request (AR) has been issued to plan for and implement additional cabinet internal inspections.

As of revision 2 of this report, the inaccessible components with the exception of the Component Cooling Water surge tank (4T218), have been inspected. The surge tank has been removed from the SWEL and this is acceptable because a sufficient number of items of this type were initially included in the SWEL.

Table E-1. Completely Inaccessible Equipment

Component ID	Description	Reason for Inaccessibility
4T229B	SI ACCUM B	Item is within Containment and plant was operating at the time of inspection.
4V30B	EMERGENCY CONTAINMENT COOLER B	Same as above
MOV-4-535	PRESSURIZER PORV BLOCK VALVE	Same as above
MOV-4-744A	RHR LO HEAD SI TO LOOP A MOTOR OPERATED VLV	Same as above
MOV-4-751	NORMAL RHR INLET FROM RCS MOTOR OPERATED VLV	Same as above
MOV-4-865A	SI ACCUM A DISCH MOTOR OPERATED VLV	Same as above
PCV-4-4885	PRZR PORV N2 BACKUP SUPPLY PRESSURE REGULATOR	Same as above
SV-4-455C	PRESSURIZER PORV SOLENOID VALVE	Same as above
TW-4-412C	DELTA T-TAVG CH I COLD LEG 1 THERMOWELL	Same as above
4T218	COMPONENT COOLING SURGE TANK	Surge tank area not accessible during walkdown, plant security issues.

Table E-2. Internal anchorage of equipment not accessible for inspection

Component ID	Description	Reason for Inaccessibility
4AB	4AB 4.16V SWITCHGEAR 4A (CABINET)	Electrical hazard
4AD	4.16KV SWITCHGEAR 4AD FOR BUS 4D	Electrical hazard
4D23	4D23 (DISTRIBUTION PANEL)	Electrical hazard

Table E-3. Status of internal inspection of electrical cabinets

Component ID	Description	Class	Status
4B05	A-MCC (CABINET)	01	MCC is within an environment enclosure. Opened enclosure doors and inspected front of MCC.
4B06	B-MCC (CABINET)	01	MCC kick plates (lower plates) were opened and the interior was inspected.
4B07	C-MCC (CABINET)	01	Same as above.
4B08	D-MCC (CABINET)	01	Same as above.
4B02	4B02 480V HVPDS LOAD CENTER 4B (CABINET)	02	Not accessible due to plant operation/safety hazard.
4B04	4D LC (Part of B train)	02	Same as above.
4B50	4H LOAD CENTER (CABINET)	02	Permission to open spare compartments. Opened 3 of 3 lower doors.
4AB	4AB 4.16V SWITCHGEAR 4A (CABINET)	03	See Table E.2
4AD	4.16KV SWITCHGEAR 4AD FOR BUS 4D	03	See Table E.2
4D01	4D01 (DISTRIBUTION PANEL)	14	Kick plates (lower plates) were opened and the interior was inspected.
4D23	4D24 (DISTRIBUTION PANEL)	14	See Table E.2
4D02A	4B2 BATTERY CHARGER	16	Permission to open lower compartments. Opened 2 of 2 lower doors.
4Y05	STATIC INVERTER 4C 125 VDC/120 VAC 7.5 KVA (CABINET)	16	Not accessible due to plant operation/safety hazard.
4Y07	STATIC INVERTER 4D 125 VDC/120 VAC 7.5 KVA (CABINET)	16	Same as above.
4D02	4B1 BATTERY CHARGER	16	Same as above.
4D25	4A1 BATTERY CHARGER	16	Permission to open lower compartments. Opened 2 of 2 lower doors.

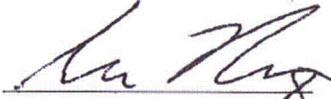
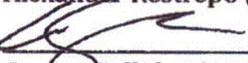
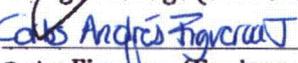
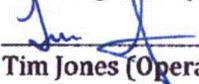
F

Peer Review Report

**Peer Review Report for the
Seismic Walkdown Inspection of Turkey Point Nuclear
Station (NRC Near Term Task Force Recommendation
2.3)**

Turkey Point Nuclear Station

October 2012

Prepared by		10/26/12
	Alexander Restrepo (PR Team Lead)	Date
Reviewed by		10/26/12
	George Tullidge (PRA Group)	Date
Reviewed by		11/1/12
	Carlos Figueroa (Engineering)	Date
Reviewed by		11/1/12
	Tim Jones (Operations)	Date

1. INTRODUCTION

This report documents the peer review of the seismic walkdowns performed for Turkey Point Nuclear Station in September 2012, in support of the NRC Near Term Task Force (NTTF) Recommendation 2.3. This document describes the peer review team and process (Section 3), the peer review of the SWEL selection (Section 4), and the peer review of the seismic walkdown (Section 5).

The peer review was performed consistent with Section 6 of the EPRI-TR-1025286 ^(REF 1) guidance document and addresses the following specific activities:

- Review of the selection of components for the Seismic Walkdown Equipment List (Section 4)
- Review of a sample of the checklists prepared for the Seismic Walkdowns & Walk-Bys (Section 5.1)
- Review of any licensing basis evaluations (Section 5.2)
- Review of the decisions for entering the potentially adverse conditions in to the plant's Corrective Action Program (Section 5.2)
- Review of the final submittal report (Section 6).

2. BACKGROUND

This peer review covers three portions of the seismic walkdown: (a) the preparation of the SWEL, (b) the actual walkdown, and (c) the final submittal report.

The Seismic Walkdown Equipment List (SWEL) was prepared in July and August and finalized in September 2012, based on revisions that occurred during the walkdowns. Section 3 describes the process of peer reviewing the SWEL.

The vast majority of the initial seismic walkdowns occurred September 11 through September 20. The peer review of the walkdowns occurred in the afternoons of those same dates. This portion of the peer review is documented in Section 4.

During the initial seismic walkdowns, two entire areas – the containments – were deferred for each unit for completion during each following respective outage as supplemental seismic walkdowns. This allowed the initial walkdowns to occur with less radiation exposure to the walkdown team.

Also, during these initial seismic walkdowns, four components could not be examined entirely with the bus powered: Essential 4KV switchgear Buses 3AB and 4AB, and the protected sequencers during walkdowns which were 3C23B and 4C23B. Consequently, the walkdowns for these components were performed in February and May 2013 as supplemental seismic walkdowns and documented in Revision 2 of this report.

3. Peer Review Team & Process

The Turkey Point (PTN) Peer Review Team for the initial seismic walkdowns consisted of individuals from PTN operations, civil engineering, licensing, and PRA as well as structural/seismic engineers from Stevenson & Associates. These individuals participated in phases of preparation, performance, and peer review of the seismic walkdowns.

Similarly, the Turkey Point (PTN) Peer Review Team for the supplemental seismic walkdowns under Revision 2 of this report consisted of individuals from PTN operations, civil engineering, licensing, and PRA. These individuals participated in phases of preparation, performance, and peer review of the seismic walkdowns.

This section documents the peer review process and how the Peer Review Team interacted with the Seismic Walkdown Engineering Teams.

3.1 Peer Review Team

The affiliation, role, and qualifications for each Peer Review Team member are summarized in the following table.

Initial Seismic Walkdowns (Revision 1 of this report)

Name	Group	Role *	Qualifications **
Tim Jones	PTN Operations	PR – SWEL	(e), (f)
Tirumani Satyan Sharma	PTN Licensing	SWE Team #1 PR – SWE Team A	(a), (b), (c), (d)
Carlos Figueroa	PTN Civil Engineering	SWE Team #2 PR – SWE Team B	(a), (b), (c), (e)
John O’Sullivan	Stevenson & Assoc. (consultant eng.)	SWE Team #1 PR – SWE Team A	(a), (b), (c)
Seth Baker	Stevenson & Assoc. (consultant eng.)	SWE Team #2 PR – SWE Team B	(a), (b), (c)
Alexander Restrepo	PTN PRA Group	PR Team Lead PTN – SWEL	(a), (e)
George Tullidge	PSL PRA Group	SWEL Review	(e)

Notes:

* Role: PR (peer review), SWEL (seismic walkdown equipment list), SWE (seismic walkdown engineer)

** Qualifications:

- (a) Completed EPRI NTT 2.3 Seismic Walkdown Training
- (b) Seismic engineering experience
- (c) Degree in mechanical engineering or civil/structural engineering
- (d) Seismic PRA / IPEEE experience
- (e) Knowledge of plant operations, documentation
- (f) Plant Operations member

Supplemental Seismic Walkdowns (Revision 2 of this report)

Name	Group	Role *	Qualifications **
Tim Jones	PTN Operations	PR – SWEL	(e), (f)
Tirumani Satyan Sharma	PTN Licensing	SWE Team #3 PR – SWE Team D	(a), (b), (c), (d)
Carlos Figueroa	PTN Civil Engineering	SWE Team #3 & #4	(a), (b), (c), (e)
Alexander Restrepo	PTN PRA Group	SWE Team #4 PR – SWE Team C PTN – SWEL	(a), (e), (d)
George Tullidge	PSL PRA Group	SWEL Review PR – Team Lead	(e)

Notes:

* Role: PR (peer review), SWEL (seismic walkdown equipment list), SWE (seismic walkdown engineer)

** Qualifications:

- (a) Completed EPRI NTTF 2.3 Seismic Walkdown Training
- (b) Seismic engineering experience
- (c) Degree in mechanical engineering or civil/structural engineering
- (d) Seismic PRA / IPEEE experience
- (e) Knowledge of plant operations, documentation
- (f) Plant Operations member

3.2 Peer Review Process

PR Team Lead

A. Restrepo served as the Peer Review Team Lead. In that role, he was responsible for coordinating the peer review and assembling this report. As described below, he also performed some additional roles as part of the walkdown team PR. He also had the lead in the SWEL preparation, so he was not part of that PR process. As such, the SWEL was independently reviewed by a PRA Engineer from PSL, a Senior License Operator from PTN and one of the Peer Reviewers from PTN. Finally, he did not participate as an active team member during the seismic walkdown process and did not perform any other work besides the one described above. Therefore, his role as the lead peer reviewer is considered acceptable

SWEL Preparation

The SWEL was prepared by A. Restrepo, who is a PTN PRA engineer, with PTN Operations experience and familiarity with the PTN IPEEE Report and the PTN PRA model.

The SWEL was reviewed by a team that included a PRA engineer (G. Tullidge), a licensing engineer (T. Satyan Sharma), a civil engineer (A. Figueroa), and an Operations representative (T. Jones). All of these individuals are familiar with the design and layout of the plant and plant documentation.

Seismic Walkdown (Initial)

The primary seismic walkdown was conducted with two teams, each with two qualified structural/seismic engineers. The Peer Review of the walkdowns consisted of a Peer Review Team Lead with Operations and PRA knowledge, and structural/seismic engineers. The structural/seismic engineers made up the SWE teams, but also served to

peer review each other's work. The Peer Review Team Lead also participated in many of the walkdowns for logistical support as well as peer review. The ultimate judgments regarding licensing basis were made by qualified PTN structural engineers.

- Seismic Walkdown Engineers (SWE):
 - SWE Team #1 - J. O'Sullivan (team lead), T. Satyan Sharma
 - SWE Team #2 - S. Baker (team lead), C. Figueroa
- PR Team Lead – A. Restrepo
- PR SWE Team A –S. Baker (team lead), C. Figueroa
- PR SWE Team B – J. O'Sullivan (team lead), T. Satyan Sharma
- Licensing Basis Reviewers – T. Satyan Sharma, C. Figueroa
- IPEEE Reviewers – A. Restrepo

Seismic Walkdown (Supplemental)

The supplemental seismic walkdowns (Revision 2 of this Report), containing deferred items and previously inaccessible electrical cabinets were also conducted with two teams, each with two qualified structural/seismic engineers. One of them, the team lead, participated in both teams as a team member. The structural/seismic engineers served to peer review each other's work.

- Seismic Walkdown Engineers (SWE):
 - SWE Team #3 (Inside Unit 03 Containment – Deferred) - C. Figueroa (team lead), T. Satyan Sharma
 - SWE Team #4 (Unopened Cabinets) - C. Figueroa (team lead), A. Restrepo.
- PR Team Lead – George Tullidge
- PR SWE Team C –A. Restrepo (SWE),
- PR SWE Team D – T. Satyan Sharma
- Licensing Basis Reviewers – T. Satyan Sharma, C. Figueroa
- IPEEE Reviewers – A. Restrepo

Review of Sample Checklists & Area Walk-bys (Supplemental)

The peer review of the supplemental seismic walkdown items included in Revision 2 of this report (i.e. deferred equipment inside containment, previously inaccessible electrical cabinets) consisted of each SWE Team (#3 and #4) presenting ALL the Seismic Walkdown Checklist (SWC) and Area Walk-by Checklist (AWC) that they had completed earlier to the SWE of the other team. The team lead (C. Figueroa) did not participate in these Peer Review sessions in order to guarantee independence due to his participation in both teams (#3 & #4)

Final Report (Initial Seismic Walkdowns)

The report for the Initial Seismic Walkdowns was prepared by the Stevenson & Assoc. consultants, with review by Turkey Point representatives from Operations, design structural engineering, and PRA.

Final Report (Supplemental Seismic Walkdowns)

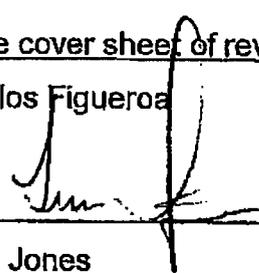
The report for the Supplemental Seismic Walkdowns was prepared by FPL Engineering with review by Turkey Point representatives from Operations, design structural engineering, JB PRA and PSL engineering.

Prepared by

(see cover sheet of rev. 2 for signature)

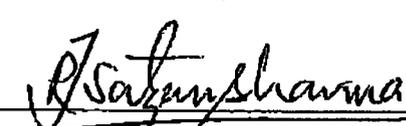
Carlos Figueroa

Peer Review by


Tim Jones

6-26-13
Date

Peer Review by


Tirumani Satyan Sharma

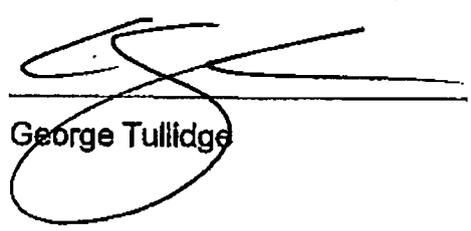
6/26/2013
Date

Peer Review by


Alexander Restrepo

6/26/13
Date

Peer Review by


George Tullidge

6/26/13
Date

4. PEER REVIEW – SELECTION OF COMPONENTS FOR SWEL

The purpose of this section is to describe the process to perform the peer review of the selected components that were included in the Seismic Walkdown Equipment List (SWEL). This peer review was based on review of the SWEL Selection Report ^(REF 2).

The guidance in Section 3: *Selection of SSCs* of the EPRI Technical Report ^(REF 1) was used as the basis for this review. Specifically, this peer review utilized the checklist in Appendix F: *Checklist for Peer Review of SSC Selection of the EPRI Technical Report* in Reference 1. Attachment 1 of this peer review report documents the completed checklist.

This peer review determined that the SSCs selected for the SWEL 1 seismic walkdowns represent a diverse sample of equipment required to perform the five safety functions and to meet the sample selection attributes, including:

- Various types of systems
- Major new and replacement equipment
- Various types of equipment
- Various environments
- Equipment enhanced based on the findings of the IPEEE
- Risk insight consideration

For SWEL 2 development, the peer review determined that spent fuel related items were adequately considered and were appropriately included or excluded.

This peer review resulted in no additional findings. All peer review comments requiring resolution were incorporated prior to completion of the SWEL Selection Report.

This peer review concludes that the process for selecting SSCs to be included on the Seismic Walkdown Equipment List appropriately followed the process outlined in Reference 1. It is further concluded that the SWEL sufficiently represents a broad population of plant Seismic Category 1 equipment and systems to meet the objectives of the NRC 50.54(f) Letter.

5. PEER REVIEW – SEISMIC WALKDOWN

The peer review of the seismic walkdown was performed by the PR Teams on September 11-20, following the walkdowns for those days. Additional peer reviews occurred following the walkdowns as documented in this report.

5.1 Review of Sample Checklists & Area Walk-bys

The peer review meetings consisted of each SWE Team (#1 and #2) presenting samples from their Seismic Walkdown Checklist (SWC) and Area Walk-by Checklist (AWC) that they had completed earlier that day. This peer review meeting following the day's walkdown activities allowed for immediate feedback between each walkdown team as well as common agreement on how some issues would be addressed.

Table 5-1 lists the sample of 14 components from each unit from the Seismic Walkdown Checklist (SWC) that were discussed in the peer review meetings. These samples represent about 14% of each unit's SWEL population of 100 components. The sample includes a variety of types of components (heat exchanger, valve, pump, tank, instrument rack, unit sub, transformer, fan, MCC, compressor, power panel, and control panel) and component locations (RHR pits, intake, RCA, DG Bldg, and Essential Switchgear room).

Table 5-1 also lists the sample of 6 areas per unit from the Area Walk-by Checklist (AWC) that were discussed in the peer review. These samples represent about 20% of the total AWC population of 30 areas.

When reviewing the components and areas during the afternoon peer review sessions, the following topics were addressed:

- Concrete cracks – For each team, concrete cracks were observed in the concrete floors where components were anchored. Since the guidance does not give discretion for the significance of the crack, the peer review team agreed that the concrete cracks near anchorage should be recorded as “U” (unresolved). Then, following further review, these findings could be changed to “YES” for minor surface cracks or “NO” for concrete crack near anchorage that may need further review.
- Physical interaction – Several of the samples were examples of close spacing between the SWEL component and a hard object (such as a hand rail), with the potential for interaction. In each case, the spacing was judged adequate, but this did reinforce the importance of careful field examination of each component.
- Seismic housekeeping – Seismic housekeeping was assessed in each area and found to be acceptable. Storage boxes were tied off or separated from equipment in designated areas. The presence of stanchions to rope off the protected train equipment was noted. It was agreed that these do not represent significant seismic risk due to the weight distribution (heavy base) and the light-weight nature of these stanchions.

- Seismic scaffolding – A number of areas had scaffolding. In each case, the scaffolding was carefully braced to provide seismic strength and documented on the scaffolding. This was observed by both walkdown teams.
- Non-safety piping in SR buildings – NS piping in all walk-by areas was observed to be well supported.

5.2 Review of Licensing Basis Evaluations & Corrective Action Process

The final report provides a list of the anomalies encountered during the Turkey Point seismic walkdown inspections and how they were addressed. The review of those anomalies demonstrates a thorough and reasonable process for the review of open issues. There were no added comments offered by the peer review team.

6. REVIEW FINAL SUBMITTAL REPORT & SIGN-OFF

The final submittal report has been reviewed by Turkey Point representatives from structural engineering, Operations, and the PRA Group, and found to meet the requirements of the EPRI 1025286 – Seismic Walkdown Guidance ^(REF: 1).

7. REFERENCES

1. EPRI Technical Report 1025286, *Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic*, June 2012.
2. Turkey Point Report, *Selection of the Turkey Point Nuclear Station Seismic Walkdown Equipment List (SWEL) for the Requirement 2.3 Walkdown*, Rev 01, September 2012.

Table 5-1: Table of Sample Components from Seismic Walkdown Checklist (SWC)

Walkdown Team (PR Team)	Equipment Identification	Walkby Area Identification
Unit 3 - SWE Team #1	LT-3-651	
(PR Team A)	HCV-3-121	209
	3B08	220
	3P212A	
	EMERG SPF CLG PMP	
	3-797	
	3E207B	202
Unit 3 - SWE Team #2	3P9B	370
(PR Team B)	3T36	
	3C23A	
	3B05	
	3K4B	409
	3D03	
	3S77	234
Unit 4 - SWE Team #1	4B07	
(PR Team A)	T205C	
	4E208A	
	4P212A	223
	4E206B	210
	4T1	217
	4P214B	
Unit 4 - SWE Team #2	4C23A	368
(PR Team B)	4k4A	
	4T8	
	4T259A	432
	4X05	
	4C12A	
	4QR35	310

ATTACHMENT 1: PEER REVIEW CHECKLIST

Peer Review Checklist for SWEL

Instructions for Completing Checklist

This peer review checklist may be used to document the review of the Seismic Walkdown Equipment List (SWEL) in accordance with Section 6: Peer Review. The space below each question in this checklist should be used to describe any findings identified during the peer review process and how the SWEL may have changed to address those findings. Additional space is provided at the end of this checklist for documenting other comments.

-
1. Were the five safety functions adequately represented in the SWEL 1 selection? Y N

Requirement met.

Remarks:

-
2. Does SWEL 1 include an appropriate representation of items having the following sample selection attributes:

- a. Various types of systems? Y N

Requirement met.

Remarks:

- b. Major new and replacement equipment? Y N

Requirement met.

Remarks:

- c. Various types of equipment? Y N

Requirement met.

Remarks:

- d. Various environments? Y N

Requirement met.

Remarks:

- e. Equipment enhanced based on the findings of the IPEEE (or equivalent) program? Y N

Requirement met.

Remarks:

Peer Review Checklist for SWEL

f. Were risk insights considered in the development of SWEL 1? Y N

Requirement met.

Remarks:

3. For SWEL 2:

a. Were spent fuel pool related items considered, and if applicable included in SWEL 2? Y N

Requirement met.

Remarks:

b. Was an appropriate justification documented for spent fuel pool related items not included in SWEL 2? Y N

Requirement met.

Remarks:

4. Provide any other comments related to the peer review of the SWELs.

5. Have all peer review comments been adequately addressed in the final SWEL? Y N

Peer Reviewer #1: Carlos Adick Ryan Date: 11/15/12
Carlos Figueroa

Peer Reviewer #2: T-Satyan Sharma Date: 11/15/12
T-Satyan Sharma