

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-14-M-TK-CCWST1

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Surface corrosion was noted on the base plates associated with the lateral braces on the east and west sides of the CCW Surge Tank.

Evaluation:

The CCW Surge Tank is Design Class I and seismically qualified. Visual examination indicates that this is surface corrosion, and will not impact the structural integrity of the tank supports.

Recommendation:

The coatings/corrosion needs to be cleaned, inspected, and repaired.

Notification Required: Yes (50515141)

Evaluated by: _____

William J. Hen

9/26/12

Reviewed by: _____

J.F. Am

10/22/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-14-P-VOA-CCW-2-FCV-365

Equipment Class: 7

Equipment Description: CCW Heat Exchanger Flow Control Valve

Location: Building: Auxiliary

Floor El. 85

Room, Area: 2-FCV-365

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. Is the Item one of the 50% of SWEL Items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the Item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-14-P-VOA-CCW-2-FCV-365

Equipment Class: 7

Equipment Description: CCW Heat Exchanger Flow Control Valve

Comment:

No seismic concerns.

Evaluated by:

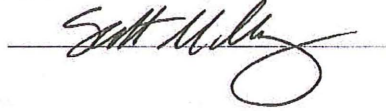
FFG



Date:

10-19-12

SMM



10/22/12

Seismic Walkdown Checklist (SWC)

Equipment ID No. DC-2-16-P-P-LINE-2242 Equipment Class¹² 0. (Other)

Equipment Description: Return Piping from Make-Up Water Transfer Pump

Location: Bldg. Auxiliary Floor El. 140' Room, Area Unit 2 Fuel Handling Area

Manufacturer, Model, Etc. (optional but recommended) n/a

Instructions for Completing Checklist

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Anchorage

- | | | |
|----|--|-----|
| 1. | Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? | N |
| 2. | Is the anchorage free of bent, broken, missing or loose hardware?
This SWC applies to potential SFP rapid drain-down through a pipe entering the SFP. Therefore, anchorage is not applicable. | N/A |
| 3. | Is the anchorage free of corrosion that is more than mild surface corrosion? | N/A |
| 4. | Is the anchorage free of visible cracks in the concrete near the anchorage? | N/A |
| 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.) | N/A |
| 6. | Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? | N/A |

Interaction Effects

- | | | |
|-----|--|-----|
| 7. | Are soft targets free from impact by nearby equipment or structures?
This SWC applies to potential SFP rapid drain-down through a pipe entering the SFP. Therefore, seismic interaction effects are not applicable. | N/A |
| 8. | Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment? | N/A |
| 9. | Do attached lines have adequate flexibility to avoid damage? | N/A |
| 10. | Based on the above seismic interaction evaluations, is the equipment free of potentially adverse seismic interaction effects? | N/A |

¹² Enter the equipment class name from Appendix B: Classes of Equipment

Seismic Walkdown Checklist (SWC)

Equipment ID No. DC-2-16-P-P-LINE-2242 Equipment Class¹² 0. (Other)

Equipment Description: Return Piping from Make-Up Water Transfer Pump

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the plant equipment? N/A

This SWC applies to potential SFP rapid drain-down through a pipe entering the SFP. Therefore, safety functions are not applicable.

Comments (Additional pages may be added as necessary)

This SWC applies to potential SFP rapid drain-down through the return pipe from the Make-Up Water Transfer Pump, which enters the SFP at its north end. This pipe crosses over the top of the concrete wall which separates the SFP from the Cask Washdown Area (CWA) (see photo on sheet 3). The open end of the pipe is located slightly below the water surface in the SFP (several inches), which is significantly more than 10' above the spent fuel assemblies stored in the SFP (approx. elevation 122'), rapid drain-down of the SFP inventory through this pipe is not possible.

Evaluated by:	WRH	<u>W. R. Howard</u>	Date:	<u>10/04/2012</u>
	DRC	<u>[Signature]</u>		<u>10/04/2012</u>

¹² Enter the equipment class name from Appendix B: Classes of Equipment

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-17-M-PP-ASP1

Equipment Class: 6

Equipment Description: ASW Pump No. 1

Location: Building: Intake

Floor El. -3.1

Room, Area: 2-ASP1

Manufacturer, model, Etc.

Instructions for Completing Checklist

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Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL Items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
There is no free, bent, broken, missing or loose hardware in the anchorage.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
Outer (6) J-bolts shows some corrosion. See Attachment 1 for disposition.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
Concrete near the seismic strut had previously been replaced. Shrinkage from the replaced concrete has caused the original surrounding concrete to crack. Cracks are small and judged not to be an issue.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
The anchorage is consistent with plant documentation. (6) 1-1/4" bolts are present on the bottom base plate. (12) 1-1/4" bolts on the top base plate are present. The top of the pump is laterally braced with a strut in one lateral direction. The opposite lateral direction is braced with two struts on each end of the pump with a 1/16" seismic gap with bumpers. The shims on the bumpers were not consistent with the design drawings. See Attachment 2 for resolution.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No credible sources were seen that could impact soft targets.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
No block walls or ceiling tiles in the room. Overhead light fixture and HVAC appear to be adequately secured to prevent collapse.
9. Do attached lines have adequate flexibility to avoid damage? Y
All attached lines appear to have adequate flexibility.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y
No credible seismic interaction issues were identified.

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-17-M-PP-ASP1

Equipment Class: 6

Equipment Description: ASW Pump No. 1

Comment:

Evaluated by:

KTM

Date:

Heri Moore

10/22/2012

SMM

SMM

10/23/2012

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-17-M-PP-ASP1

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Outer (6) J-bolts show some corrosion.

Evaluation:

Corrosion will not compromise structural integrity of the connection. The base support, in conjunction with the seismic braces still adequately restrain the pump and motor. Cleaning and recoating required.

Notification Required: Yes (50509855)

Evaluated by: *Scott Miller* 10/20/12

Reviewed by: *A. O. Quintana* 10/22/12.

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-17-M-PP-ASP1

Attachment 2, Page 1 of 1

Licensing Basis Evaluation

Issue:

An issue was noted with the configuration of the seismic support on the ASW 2-1 pump motor (hanger no. 28-44R). Specifically, the configuration of the shims on the north and south "bumpers" do not match the configuration shown on the engineering design drawing (drawing no. 051373, sheets 52, 53, etc.). The shims specified on the Bill of Materials (Item No. 32) are 8"x8" plates, with 4 holes for the bolts (thickness per field). Instead of a square plate, individual "finger" shims (a rectangular plate, with a u-shaped slot) are installed on each of the bolts.

Evaluation:

The finger shims perform the same design function as the specified square shim plate (i.e., transfer seismic loads in compression from the motor to the concrete walls), so this condition does not impact the ability of the support to perform its intended function. However, this is a configuration control issue (i.e., as-built condition is not reflected on the design drawing).

Recommendation:

Issue the appropriate design change vehicle (pipe support MMD) to update the drawing to reflect the as-built configuration.

Notification Required: Yes (50513498)

Evaluated by:

Scott M. M... 10/22/12

Reviewed by:

A. Chant... 10/22/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-17-P-VOA-SW-2-FCV-602

Equipment Class: 7

Equipment Description: ASW Flow Control Valves

Location: Building: Turbine

Floor El. 85

Room, Area: 2-CCWHE

Manufacturer, model, Etc. Fisher Governor Company

Instructions for Completing Checklist

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Anchorage

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

The bottom side of the valve is bolted to a pipe flange that is located just above the penetration to the floor. At the top, the valve is bolted to a flexible bellows section that is in turn bolted to the tube-side nozzle of the CCW Heat Exchanger. Y

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

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

4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A

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

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

Interaction Effects

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

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

Reinforced block wall near valve has additional reinforcement at the base and near the top.

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

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

The valve is housed in a pit and the electrical lines to the valve position indicators are supported off Unistrut members bolted to the bottom of the pit. Although there is a drain in the pit, it would be possible for water to collect in the pit which could result in loss of the position indication signal. However, there is no credible water source over the pit.

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-17-P-VOA-SW-2-FCV-602

Equipment Class: Z

Equipment Description: ASW Flow Control Valves

Comment:

Evaluated by:

TRK

Date:

Thomas R. Kipp

10/14/2012

KA

A. C. Diantanya 10/22/12.

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-E-HT-LOH1

Equipment Class: 0

Equipment Description: DG No. 1 Lube Oil Electric Heater

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-21

Manufacturer, model, Etc. Wallow Industries. U7-10-567-1

Instructions for Completing Checklist

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Anchorage

- | | |
|---|-----|
| 1. Is the anchorage configuration verification required (i.e. Is the item one of the 50% of SWEL items requiring such verification)? | N |
| 2. Is the anchorage free of bent, broken, missing or loose hardware?
<i>No bent, broken, missing or loose hardware.</i> | Y |
| 3. Is the anchorage free of corrosion that is more than mild surface oxidation?
<i>No significant corrosion.</i> | Y |
| 4. Is the anchorage free of visible cracks in the concrete near the anchors?
<i>No cracks observed near the anchors.</i> | Y |
| 5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.)
<i>Consistent with drawing 663082-326</i> | N/A |
| 6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? | Y |

Interaction Effects

- | | |
|--|---|
| 7. Are soft targets free from impact by nearby equipment or structures? | Y |
| 8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment?
<i>Heater is located under a permanently floor mounted steel platform, which protects it from falling items. No masonry walls.</i> | Y |
| 9. Do attached lines have adequate flexibility to avoid damage?
<i>Oil lines have flex connections, electrical conduit has sufficient flexibility</i> | Y |
| 10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? | Y |

Other Adverse Conditions

- | | |
|---|---|
| 11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? | Y |
|---|---|

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-E-HT-LOH1

Equipment Class: Q

Equipment Description: DG No. 1 Lube Oil Electric Heater

Comment:

Evaluated by:

DKN

Dan K. Nelson

Date:

10/17/2012

DRC

Dr. R. Jones

10/19/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-E-S-EQD-21

Equipment Class: 14

Equipment Description: DG No. 1 DC Power Supply Transfer Switches

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-21

Manufacturer, model, Etc. Square D Cat No. 82263

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. Is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No bent, broken, missing, or loose hardware.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No significant corrosion.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No cracks observed, but the anchorage system doesn't rely on the fire-proofing concrete on the column.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
Conduit is well supported on concrete wall and building column,
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Overhead lighting is adequately supported, conduit is well supported. No masonry walls.
9. Do attached lines have adequate flexibility to avoid damage? Y
The attached conduit is supported near the panel box to the same structural column as the panel itself. No significant relative displacements are expected.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-E-S-EQD-21

Equipment Class: 14

Equipment Description: DG No. 1 DC Power Supply Transfer Switches

Comment:

The panel box is bolted to a Unistrut assembly that is welded to the steel building column. The Unistrut members welded to the column are encased in the concrete fire-proofing cover. Internal components are adequately secured to panel box, no missing screws

Evaluated by:

DKN

Daniel K. ...

Date:

10/17/2012

DRC

Ji R. ...

10/19/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-E-S-EQD-23

Equipment Class: 14

Equipment Description: DG No. 3 DC Power Supply Transfer Switches

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-23

Manufacturer, model, Etc. Square D Company

Instructions for Completing Checklist

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Anchorage

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

The small panel includes (4) welded tabs at each corner through which (4) 3/8" bolts secure the panel to (2) Unistrut assemblies located at the top and bottom of the panel. The Unistrut assemblies are in turn welded to a building column (covered by fire resistant material). Y

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

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

4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A

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

Anchorage is consistent with drawings 663082-199-1 and 505413-1.

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

Interaction Effects

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

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

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

All connecting electrical lines are contained within rigid conduit.

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-E-S-EQD-23

Equipment Class: 14

Equipment Description: DG No. 3 DC Power Supply Transfer Switches

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

KA

A.K. Ceitampa

10/22/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-EN-DEG1

Equipment Class: 17

Equipment Description: Diesel Generator No. 1 (Engine and Generator)

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-21

Manufacturer, model, Etc. Alco Engine Co

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No bent, broken, missing, or loose hardware.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
Only very minor surface corrosion at the radiator end
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No cracks observed in the concrete near the anchors.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
14 - 1-1/4 in sleeved anchor bolts and 10 lateral seismic stays (3 on each side, 2 at each end) , see drawings 663082-103 (4 pages) , 443080 sheet 1, 443079 sheet 1, 4004947 sheet 1
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
Only possible soft targets are stainless steel tubing, but no credible interaction sources.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
No credible interaction sources. Overhead piping, Cardox piping, and conduit are well supported. Lighting is hung by conduit. No masonry walls.
9. Do attached lines have adequate flexibility to avoid damage? Y
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-EN-DEG1

Equipment Class: 17

Equipment Description: Diesel Generator No. 1 (Engine and Generator)

Comment:

Includes subcomponents: DC-2-21-M-TK-DFODT1, DC-2-21-M-PP-JWP1, DC-2-21-M-GN-DEG1, DG No. 1 Main Lead Terminal Box

Evaluated by:

DKN

Dan K. N...

Date:

10/17/2012

DRC

D. R. C...

10/19/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-EN-DEG3

Equipment Class: 17

Equipment Description: Diesel Generator No. 3 (Engine and Generator)

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-23

Manufacturer, model, Etc. ALCO Power

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

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

The Diesel Generator skid is anchored by (14) 1-1/4" sleeved anchor bolts and (10) lateral stops (3 on each side and 2 on each end). Y

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

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

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

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

The anchorage of the skid is identical to that shown on drawings 498524-1 and 498528-1.

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

The welds cannot be seen on the SE corner side restraint. Welds for all other side restraints are visible. It appears that the welds to the baseplate may have been covered by the floor slurry that was poured to promote proper drainage in the room. For disposition see Attachment 1.

Interaction Effects

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

Soft targets consist only of small tubing lines. No credible falling sources were identified.

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

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

All parts are on a common skid and all skid-mounted items appear to be properly anchored to the skid.

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-EN-DEG3

Equipment Class: 17

Equipment Description: Diesel Generator No. 3 (Engine and Generator)

Comment:

Includes The following subcomponents.

Fuel Oil Day Tank DC-2-21-M-TK-DFODT3 which is a welded steel box that is located under the engine and integral with the skid. No structural integrity issues were identified.

Radiator Water Pump DC-2-21-M-PP-JWP3 which is attached to the engine and was reviewed.

Electrical Generator DC-2-21-M-GN-DEG3 which was reviewed.

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/25/2012

KA

A.K. Antanya

10/25/12.

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-21-M-EN-DEG3

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Welds cannot be seen on the SE corner side restraint. Welds for all other side restraints are visible.

Evaluation:

The work activity that installed the horizontal restraints for the 2-3 Diesel Generator was QA Class I and QA/QC was required, as shown in the original construction package C0073102 Activity 07. A copy of this completed activity clearly shows that this weld was installed per the design drawings and inspected per approved QA/QC processes (ref. pages from the work order activity that label this restraint as "EMBED #6" and the weld in question as FW-5).

Since construction work package C0073102-07 documents that the welds on the SE corner horizontal restraint are identical to that shown on drawings 498524-1 and 498528-1, and all other welds on these horizontal restraints have been verified in the field as sufficient, it can be reasonably assumed that these welds are installed as well.

Therefore, no further action is required.

Notification Required: No ()

Evaluated by: A. K. Panya 10/25/12

Reviewed by: S. M. M. SMM 10/25/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-MISC-ES1

Equipment Class: Q

Equipment Description: DG No. 1 Exhaust Silencer

Location: Building: Turbine

Floor El. 107

Room, Area: 2-DEG-ES-21

Manufacturer, model, Etc.

Instructions for Completing Checklist

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Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion observed.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
The silencer is anchored on two saddles, one a sliding support, the other a fixed support. Each saddle is anchored to a concrete pier with two 1 in diameter bolts.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No soft targets
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Overhead rod hung small piping unlikely to collapse, adjacent masonry walls have out of plane strengthening and are not an interaction issue
9. Do attached lines have adequate flexibility to avoid damage? Y
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-MISC-ES1

Equipment Class: Q

Equipment Description: DG No. 1 Exhaust Silencer

Comment:

Evaluated by:

DKN

Daniel Halpern

Date:

10/17/2012

DRC

DDR Kim

10/19/2012

Seismic Walkdown Checklist (SWC)

Status: YN

Equipment ID No DC-2-21-M-MISC-ES3

Equipment Class: 0

*KA 11/19/12
JRK 11/20/12*

Equipment Description: DG No. 3 Exhaust Silencer

Location: Building: Turbine

Floor El. 107

Room, Area: 2-DEG-ES-23

Manufacturer, model, Etc. Kittell Muffler & Engineering Company

Instructions for Completing Checklist

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Anchorage

- | | |
|---|-----|
| 1. Is the anchorage configuration verification required (i.e, is the item one of the 50% of SWEL items requiring such verification)? | N |
| <i>The Exhaust Silencer is supported by two saddle supports set on short concrete pillars. The inlet side support is fixed and the outlet side support is sliding. Two (2) embedded bolts anchor each saddle.</i> | Y |
| 2. Is the anchorage free of bent, broken, missing or loose hardware? | Y |
| 3. Is the anchorage free of corrosion that is more than mild surface oxidation? | Y |
| 4. Is the anchorage free of visible cracks in the concrete near the anchors?
<i>The silencer has no visible corrosion.</i> | Y |
| 5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) | N/A |
| 6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? | Y |

Interaction Effects

- | | |
|--|---|
| 7. Are soft targets free from impact by nearby equipment or structures?
<i>There are no soft targets for silencer.</i> | Y |
| 8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment?
<i>Some rusting of pipe clamp on line (possibly conduit) running over silencer. No impact on silencer. Nearby reinforced block wall includes substantial additional steel support framing.</i> | Y |
| 9. Do attached lines have adequate flexibility to avoid damage? | Y |
| 10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? | Y |

Other Adverse Conditions

- | | |
|---|--------|
| 11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? | Y
N |
|---|--------|

Washers at sliding support (south end of silencer) are too small and do not adequately span the width of the slotted hole in the support baseplate. For disposition see Attachment 1.

*KA 11-19-12
JRK 11/20/12*

Seismic Walkdown Checklist (SWC)

Status: ~~Y~~ N

Equipment ID No DC-2-21-M-MISC-ES3

Equipment Class: 0

KA 11-19-12
JKK 11/20/12

Equipment Description: DG No. 3 Exhaust Silencer

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/25/2012

KA

A. Khattanya

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-21-M-MISC-ES3

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Washer at sliding support (south end of silencer) are too small and do not adequately span the width of the slotted hole in the support baseplate.

Evaluation:

The appropriate bearing area between the underside of the nuts on the anchor rod at the sliding end of the silencer (see drawing no. 498841 "DG Exhaust Silencer Support @ El. 107'-0" and silencer drawing shown on sheet S-13 of calculation no. D-21.1-4) and the top surface of the foot of the silencer is not achieved due to the size of the nut and washer relative to the width of the slotted hole (it appears that the washer may be distorted, and drawn slightly into the slotted hole).

Due to the above mentioned condition, the tensile capacity of the anchor rod could be reduced due to reduction in bearing area under the nut.

Impact Assessment:

- A review of the seismic calculation for the silencer anchorage (calc. no. D-21.1-4) indicates that the tensile (upwards acting load due to seismic loading combination) is approx. 5,000 lbs, compared to a full allowable tensile load for the anchor rod of 63,600 lbs. Since the capacity is over 10 times the demand, the potential reduction in capacity due to reduced bearing area can easily be accommodated.

- In addition, the vertical support for the exhaust silencer provided by the anchorage at the fixed-end, and the vertical support provided by the nearby pipe supports on the exhaust discharge piping will be able to accommodate any load redistribution from the sliding end support.

Therefore, this condition does not prevent the exhaust silencer from performing its intended function during and after a seismic event.

Furthermore, Piping study calculation 2168 is prepared to analyze the existing condition of EDG 2-3 silencer. There were two ME101 runs prepared to depict two different boundary conditions for EDG 2-3 silencer. The ME101 outputs are provided to evaluate the anchorage of EDG 2-3 silencer. Two cases are analyzed 1) no vertical restraint at node 45 (slotted end), and 2) no bilat at node #45. Based on the analysis, the results on the anchor bolts at fixed end (node #40) are still within the allowable. Therefore, it is determined that the as-found condition has no adverse effects on the seismic qualification of EDG 2-3 exhaust silencer.

Notification Required: Yes (50509522)

Evaluated by: Patrick Huang 10/23/12

Reviewed by: A. Chantanya 10/23/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-MISC-IS1

Equipment Class: 0

Equipment Description: DG No. 1 Inlet Silencer

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-21

Manufacturer, model, Etc. Kittell Muffler and Engineering.

Instructions for Completing Checklist

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Anchorage

1. Is the anchorage configuration verification required (i.e, is the item one of the 50% of SWEL items requiring such verification)? N
- Bolted to the intake pipe with 20 1-1/4 inch bolts in a flange connection, flexible connection to the turbocharger, just above the flange connection the intake pipe is supported on the concrete wall* Y
2. Is the anchorage free of bent, broken, missing or loose hardware?
No bent, broken, or missing hardware. Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation?
No corrosion observed. Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions?
The intake pipe support is anchored to the concrete wall with 4 through-bolts Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures?
No real soft targets. Y
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment?
No masonry walls. Piping, Cardox pipes, and conduit are well supported. Y
9. Do attached lines have adequate flexibility to avoid damage?
The silencer has a flex connection where it joins the main body of the diesel generator. Y
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-MISC-IS1

Equipment Class: 0

Equipment Description: DG No. 1 Inlet Silencer

Comment:

Evaluated by:

DKN

Date:

Daniel Halder 10/17/2012

DRC

J. R. ... 10/19/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-MISC-IS3

Equipment Class: 0

Equipment Description: DG No. 3 Inlet Silencer

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-23

Manufacturer, model, Etc. Kittell Muffler & Engineering Company

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e, is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y
Inlet Silencer is connected to the piping by means of a bolted flange. The piping is supported both vertically and horizontally just above the Silencer.

Interaction Effects

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-MISC-IS3

Equipment Class: 0

Equipment Description: DG No. 3 Inlet Silencer

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

KA

A.K. Santampa 10/22/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-TK-AR1A

Equipment Class: 21

Equipment Description: DG No. 1 Air Start Receiver A

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-21

Manufacturer, model, Etc. HSB Corporation

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No bent, broken, missing or loose hardware.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion observed.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No cracks near the anchors.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
The existing anchorage is consistent with calculation D-21.7-1
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
Potential soft target is the stainless steel tubing entering the tank in two locations. No credible interaction sources
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Emergency lighting is restrained by a cable and bracket, overhead lighting is well supported, PA speaker is anchored, no masonry walls
9. Do attached lines have adequate flexibility to avoid damage? Y
The attached air line feeding the diesel generator are threaded, but have multiple bends which provide flexibility. The stainless steel tubing is flexible.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-21-M-TK-AR1A

Equipment Class: 21

Equipment Description: DG No. 1 Air Start Receiver A

Comment:

Evaluated by:

DKN

Daniel Adams

Date:

10/17/2012

DRC

D.R. Kim

10/19/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-TK-AR3A

Equipment Class: 21

Equipment Description: DG No. 3 Air Start ReceiverA

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-23

Manufacturer, model, Etc.

Instructions for Completing Checklist

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Anchorage

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

The vertical tank is anchored by four (4) 7/8" embedded anchors. The tank does not have an upper support.

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

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

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

Very fine hairline crack in grout pad near one anchor bolt. Judged not to affect anchor bolt capacity.

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

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

Interaction Effects

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

Soft targets consist of small diameter SS tubing which could cause the tank to vent if broken by falling objects. No credible seismic interaction sources were found.

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

No masonry walls; lighting fixtures are positively restrained. Emergency lighting secured to walls through Unistrut members.

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

All piping joints are welded.

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

The weld between the skirt and the lower tank head is joined by an intermittent weld. The intermittent welds are 3-1/2 to 4" in length spaced about 12" apart and are judged to be adequate.

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-M-TK-AR3A

Equipment Class: 21

Equipment Description: DG No. 3 Air Start ReceiverA

Comment:

Evaluated by:

TRK

Date:

Thomas R. Kipp

10/14/2012

KA

A. Q. Drenth 10/22/12.

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-P-FL-CAF1

Equipment Class: Q

Equipment Description: DG No. 1 Inlet Air Filter

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-21

Manufacturer, model, Etc. Paulson Equipment Co

Instructions for Completing Checklist

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Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No bent, broken or missing hardware.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion observed.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y
The filter is connected to the inlet piping through a bolted flange connection with (10) 1-1/4" bolts. A vertical pipe strut supports the piping just downstream of the filter. The filter is braced to the concrete slab above and to the adjacent concrete wall.

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No soft targets.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
No credible interaction sources
9. Do attached lines have adequate flexibility to avoid damage? N/A
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-P-FL-CAF1

Equipment Class: Q

Equipment Description: DG No. 1 Inlet Air Filter

Comment:

Evaluated by:

DKN

[Signature]

Date:

10/17/2012

DRC

[Signature]

10/19/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-P-FL-CAF3

Equipment Class: Q

Equipment Description: DG No. 3 Inlet Air Filter

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-23

Manufacturer, model, Etc. Paullin Equipment Company

Instructions for Completing Checklist

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Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
The filter cartridge itself constitutes a soft target, but there is nothing above or to the side of the inlet filter that could fall and cause damage to the Inlet Filter.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
9. Do attached lines have adequate flexibility to avoid damage? N/A
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-P-FL-CAF3

Equipment Class: 0

Equipment Description: DG No. 3 Inlet Air Filter

Comment:

The anchorage for the left strut in the "V" support system at the free end of the Inlet Air Filter could not be seen. It appears that the baseplate may be either welded or bolted to a horizontal steel column that is then covered with fire protection insulation blocking the view of the baseplate anchorage.

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

KA

A. Chaitanya 10/22/12.

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-P-V-DEG-2-LCV-89

Equipment Class: 7

Equipment Description: DG No. 1 Fuel Off Shutoff Valve Header A

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-21

Manufacturer, model, Etc.

Instructions for Completing Checklist

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Anchorage

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

2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No bent, broken, or missing hardware.

3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No significant corrosion observed.

4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A

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

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

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
3/8 inch gap exists between the valve operator and the concrete trench wall to the north, pipe supports are located 3 ft to the east and 3.5ft to the west of the valve, pipe appears to be adequately supported and the pipe displacements are expected to be sufficiently small such that the valve operator is not expected to impact the trench wall

8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Valve and pipe are located in a concrete trench with steel grating cover, so the valve is protected.

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

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-P-V-DEG-2-LCV-89

Equipment Class: I

Equipment Description: DG No. 1 Fuel Off Shutoff Valve Header A

Comment:

2-LCV-89 is a line-mounted valve. The pipe is located in a trench in the concrete floor. The trench is covered by steel grating that is secured with set screws.

Evaluated by:

DKN

Daniel Valentin

Date:

10/17/2012

DRC

D.J. R...

10/19/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-P-VOA-DEG-2-LCV-87

Equipment Class: Z

Equipment Description: DG No. 3 Fuel Off Shutoff Valve Header A

Location: Building: Turbine

Floor El. 85

Room, Area: 2-DEG-23

Manufacturer, model, Etc. Anchor-Darling

Instructions for Completing Checklist

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Anchorage

1. Is the anchorage configuration verification required (i.e, is the item one of the 50% of SWEL items requiring such verification)? N
- Small valve with a small operator. The valve body is bolted between pipe flanges in pipe sections having pipe flanges located within 26" upstream and downstream of valve. The piping is laterally supported on both sides within 33" of the valve.*
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

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

The valve is protected by it's location under the DG Skid extension which supports the Jacket Water Cooler.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? N/A
9. Do attached lines have adequate flexibility to avoid damage? Y
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-21-P-VOA-DEG-2-LCV-87

Equipment Class: Z

Equipment Description: DG No. 3 Fuel Off Shutoff Valve Header A

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

KA

A. K. Chantigny

10/22/12.

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-E-HT-2EH-29A

Equipment Class: Q

Equipment Description: Post-LOCA Sampling Room Ventilation Duct Heater No. 29A

Location: Building: Auxiliary

Floor El. 100

Room, Area: 2-HT-EH-29A

Manufacturer, model, Etc. Nutherm International

Instructions for Completing Checklist

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Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
In-line heater mounted between duct flanges. The heater is duct-mounted with no separate support for the heater. The ducting appears to be adequately supported. Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation?
4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No visible soft targets.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Room lighting fixtures pose the only falling source and all are well anchored to the lighting conduit runs.
9. Do attached lines have adequate flexibility to avoid damage? Y
Flex conduit.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-E-HT-2EH-29A

Equipment Class: Q

Equipment Description: Post-LOCA Sampling Room Ventilation Duct Heater No. 29A

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

DRC

D.R. Kim

10/18/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-E-PNL-CRC6

Equipment Class: 20

Equipment Description: Control Room Ventilation Control Cabinets

Location: Building: Auxiliary

Floor El. 154

Room, Area: 2-CR-37

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
Anchorage consists of (4) bolts with spring nuts to (2) horizontal Unistrut members that are in turn bolted to the concrete wall with (4) concrete anchors. Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
All nearby wall-mounted panels and junction boxes are well anchored.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Overhead HVAC ducting has rigid frame supports combined with rod hangers.
9. Do attached lines have adequate flexibility to avoid damage? Y
All connections are class 1 supported rigid conduit.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-E-PNL-CRC6

Equipment Class: 20

Equipment Description: Control Room Ventilation Control Cabinets

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

DRC

D. R. K.

10/18/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-E-PNL-PCCFC1

Equipment Class: 20

Equipment Description: CFCU SIS and Auto Bus Transfer Relay Cabinet, Bus F

Location: Building: Auxiliary

Floor El. 100

Room, Area: 2-PNL-ARP

Manufacturer, model, Etc.

Instructions for Completing Checklist

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Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
All anchor bolts are securely fastened.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion is present.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No cracks are visible.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
(4) 1/2" anchor bolts at the base. Internal components are mounted on a plate with 4 anchor bolts.
6. Based on the above anchorage evaluations; is the anchorage free of potentially adverse seismic conditions? Y
The frame is braced laterally in-plane with the panel. The bottom of the panel has stiffener plates welded to the frame and the floor in the out-of-plane direction of the panel.

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
All nearby cabinets and conduit are seismically restrained.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Block walls have been retrofitted with steel members which are anchored to the floor and to the ceiling.
9. Do attached lines have adequate flexibility to avoid damage? Y
No issues with attached lines.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-E-PNL-PCGFC1

Equipment Class: 20

Equipment Description: CFCU SIS and Auto Bus Transfer Relay Cabinet, Bus F

Comment:

Evaluated by:

KTM

Date:

Keri Mow

10/18/2012

SMM

SMM

10/22/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BC-CP-37

Equipment Class: 12

Equipment Description: Control Room Ventilation Air Conditioning Compressors

Location: Building: Auxiliary

Floor El. 154

Room, Area: 2-CP-37

Manufacturer, model, Etc. Trane

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
The compressor unit is bolted to (2) transverse base channels by (4) 1/2" bolts. The heavy structural channel sections are in turn secured to the floor slab by (4) 5/8" embedded anchors that have anchor plates at the bottom.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
Anchorage is consistent with drawing 443333-1.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
Soft targets consist of very small diameter copper tubing. However, the tubing is generally protected by the adjacent control panel and its support frame.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Overhead conduit and fire water piping are well supported and an HVAC Fan and ducting are also well supported. The reinforced masonry wall includes additional support both at the base and the top.
9. Do attached lines have adequate flexibility to avoid damage? Y
Both the electrical connections and the compressor inlet and outlet nozzles include flexible sections.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BC-CP-37

Equipment Class: 12

Equipment Description: Control Room Ventilation Air Conditioning Compressors

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

DRC

J.P. [Signature]

10/18/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BF-2E-1

Equipment Class: 9

Equipment Description: Aux. Bldg Ventilation Exhaust Fans

Location: Building: Auxiliary

Floor El. 140

Room, Area: 2-BF-2E-1

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

- | | |
|--|-----|
| 1. Is the anchorage configuration verification required (i.e. Is the item one of the 50% of SWEL items requiring such verification)? | N |
| 2. Is the anchorage free of bent, broken, missing or loose hardware?
<i>All anchorage is present and in good condition.</i> | Y |
| 3. Is the anchorage free of corrosion that is more than mild surface oxidation?
<i>Part of the fan skid and some anchor bolts at the bottom of the skid had minor surface corrosion. Backdraft dampers have mild surface corrosion. No structural issues.</i> | Y |
| 4. Is the anchorage free of visible cracks in the concrete near the anchors?
<i>No visible cracks were seen.</i> | Y |
| 5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) | N/A |
| 6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions?
<i>No adverse seismic conditions were identified.</i> | Y |

Interaction Effects

- | | |
|---|---|
| 7. Are soft targets free from impact by nearby equipment or structures?
<i>No credible sources were identified that could impact soft targets.</i> | Y |
| 8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment?
<i>(A closed) gm 10/12/12 KTM 11/20/12</i>
<i>No overhead equipment, distribution systems, ceiling tiles or lighting in the room. Lighting was rod hung with a ball and socket joint on one end and an S-hook on the opposite end of the fixture. Seismic interaction is judged to be incapable of damaging equipment or soft targets.</i> | Y |
| 9. Do attached lines have adequate flexibility to avoid damage?
<i>All attached lines use flexible conduit.</i> | Y |
| 10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects?
<i>No issues were identified.</i> | Y |

Other Adverse Conditions

- | | |
|---|---|
| 11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? | Y |
|---|---|

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BF-2E-1

Equipment Class: 9

Equipment Description: Aux. Bldg Ventilation Exhaust Fans

Comment:

Evaluated by:

KTM

Heri Mow

Date:

10/15/2012

SMM

[Signature]

10/18/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BF-2E-4

Equipment Class: 9

Equipment Description: FHBVS Normal Exhaust Fan

Location: Building: Auxiliary

Floor El. 140

Room, Area: 2-BFE4

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e, is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
Belt-driven squirrel cage fan that is bolted to a 6" I-beam frame by (3) 5/8" bolts on either side. The frame is in turn bolted to the concrete floor slab by (4) 5/8" embedded anchor bolts on either side and by (3) additional 5/8" embedded bolts on the motor end. The motor is bolted to a motor base that is welded to the base frame for the fan. Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation?
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
The only soft targets for the fan consist of the electrical lines and tubing connections for the fan actuator which is separately supported. The wall-mounted HEPA filters are adequately restrained.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
The ventilation ducting is rigidly supported and a flexible connection exists between the fan and the exhaust ducting. Room lighting is either wall mounted or hung from the ceiling by pipe sections with ball and socket connections.
9. Do attached lines have adequate flexibility to avoid damage? Y
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y
The overhead crane has been removed from the crane rail.

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BF-2E-4

Equipment Class: 9

Equipment Description: FHBVS Normal Exhaust Fan

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

DRC

JRH

10/18/2012

Seismic Walkdown Checklist (SWC)

Dec 11/19/12
 Status: Y N
 JRC 11/20/12

Equipment ID No DC-2-23-M-BF-2S-37

Equipment Class: 10

Equipment Description: Control Room Ventilation Supply Fans

Location: Building: Auxiliary

Floor El. 154

Room, Area: 2-CP-37

Manufacturer, model, Etc. Trane

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

- | | |
|--|---|
| <p>1. Is the anchorage configuration verification required (i.e, is the item one of the 50% of SWEL items requiring such verification)?</p> | Y |
| <p>2. Is the anchorage free of bent, broken, missing or loose hardware?</p> <p><i>Unit is welded to stiffened channel sections that run along either side. The side channels are each bolted to the floor by (4) 1/2" embedded anchors. Additional support for the inlet-side extension is also provided.</i></p> | Y |
| <p>3. Is the anchorage free of corrosion that is more than mild surface oxidation?</p> | Y |
| <p>4. Is the anchorage free of visible cracks in the concrete near the anchors?</p> | Y |
| <p>5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.)</p> | N/A |
| <p>6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions?</p> <p><i>The vendor welds between the base frame of the unit and the four sheet metal base angles is quite small in some cases. The smallest welds are 1-1/2" long 1/8" fillet weld on the inside and a 1-1/2" long 1/16" effective seam weld on the outside. It was found that the as-built calculation DHV-1.3 considered the welds as 1-5/8" long 3/16" effective welds at both ends. For disposition see Attachment 1.</i></p> | <p style="font-size: 2em;">Y N</p> <p style="font-size: 0.8em;">JRC 11/19/12 11/20/12</p> |

Interaction Effects

- | | |
|---|---|
| <p>7. Are soft targets free from impact by nearby equipment or structures?</p> <p><i>No visible soft targets. The motor for the belt-driven fan is mounted directly on the unit.</i></p> | Y |
| <p>8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment?</p> <p><i>Conduit, piping, and room lighting well supported.</i></p> | Y |
| <p>9. Do attached lines have adequate flexibility to avoid damage?</p> | Y |
| <p>10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects?</p> <p><i>Flexible joints connect the fan to both the inlet and outlet-side ducting.</i></p> | Y |

Other Adverse Conditions

- | | |
|--|---|
| <p>11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment?</p> <p><i>Electrical connection to solenoid valve (VAC-2-SV-5020) on coil section is very weak and unsupported length of conduit to valve is relatively long. For disposition see Attachment 2.</i></p> | Y |
|--|---|

Seismic Walkdown Checklist (SWC)

DEC 11/19/12

Status: N

Equipment ID No DC-2-23-M-BF-2S-37

Equipment Class: 10

TRK 11/20/12

Equipment Description: Control Room Ventilation Supply Fans

Comment:

Includes Cooling Coil Unit DC-2-23-M-HX-C37 which is integral with the Fan Unit and supported by it.

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/25/2012

DRC

W. H. Lee

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-BF-2S-37

Attachment 1, Page 1 of 3

Licensing Basis Evaluation

Issue:

The weld size for the welded connection of the vendor-supplied fan unit to the skid is smaller than that considered in calculation no. DHV1-001.03 (See attached sketch). The calculation assumed a 3/16" fillet weld on the vertical legs of the two connection angles, but the as-found weld size is 1/8" on one angle and 1/16" on the other.

Evaluation:

Note: The same condition was also found on Unit 1 Fan No. S-35 (Ref. Notification No. 50511891).

The supply fan Design Class I and seismically qualified. The seismic evaluation of the connection angle (L1-1/2x2x3/16) is documented on pages 54 through 61 of calculation no. DHV1-001.03.

The calculation was based on the original field walkdown, which indicated that the weld between the supply fan and connection angle is a 3/16" fillet weld, 1-1/2" long on both sides. The connection between the angle and base skid are 1/2" diameter bolt and a 3/16" fillet weld, 8" long.

The evaluation of the as-found condition, shown on page 3, indicates that the as-found condition has significant margin. Therefore, the as-found condition has no adverse effects on the seismic qualification of supply fan no. S-37.

Recommendations:

- Revise calculation no. DHV1-001.03 to address the as-found weld configuration.
- Update applicable drawings to show as-built weld sizes.

Notification Required: Yes (50519443)

Evaluated by: PWH

Patrick Huang

10/19/12

Reviewed by: WRH

William R. Horne

10/19/12

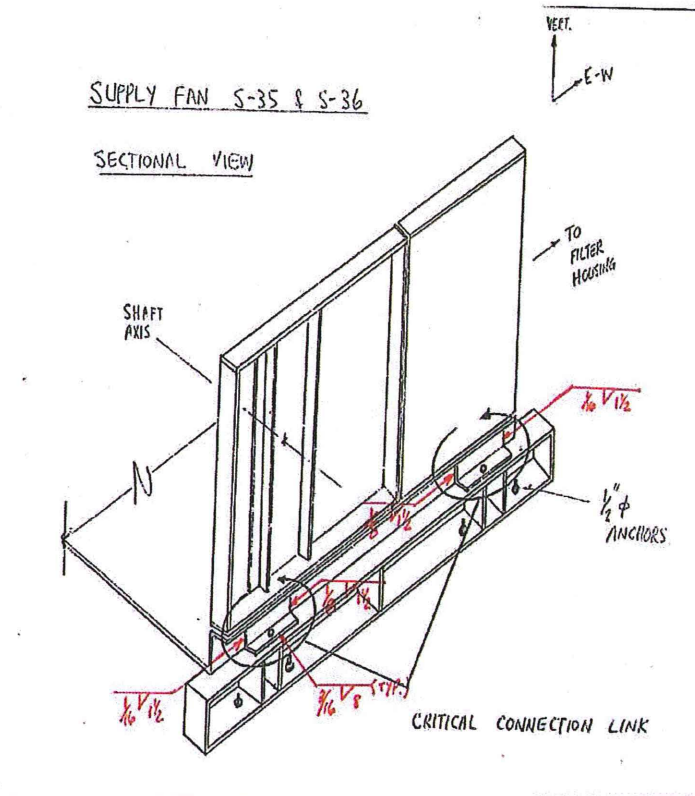
Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-BF-2S-37

Attachment 1, Page ² of 3

Sketch of As-Found Weld Configuration



Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-BF-2S-37

Attachment 1, Page 3 of 3

Evaluation of As-Found Weld Configuration

Weld between the angle and supply fan:

Weld size: fillet weld 1/8" (left) and 1/16" (right)

Weld length: 1-1/2" on each side,

Electrode: E60XX, 60 ksi

Allowable: $.707 \cdot (1/8 + 1/16) \cdot 1.5 \cdot 3 \cdot 60 = 3.58$ kips

The shear forces on the welds (see Sheet 60 of DHV-1.3)

Longitudinal: 1590 lbs due to uplift

Transverse: 985 lbs due to EW seismic

$1.59 + 0.985 = 2.575$ kips < 3.58 kips "OK"

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-BF-2S-37

Attachment 2, Page 1 of 1

Licensing Basis Evaluation

Issue:

The electrical conduit providing power to solenoid valve no. SV-5020 (located in the cooling coil supply piping on the north side of Fan No. 2S-37, is not well supported in the lateral direction.

Evaluation:

The valve (DC-2-23-I-SV-SV-5020) is Design Class I and is seismically qualified. The valve controls the flow of Freon through the cooling coils for the supply fan (see drawing no. 102023, sheet 16). The potential exists for the conduit to impose loading on the solenoid operator during a seismic event.

The instrumentation schematic for the valve control (see drawing no. 102035, sheet 24H, coordinate E-240H) indicates that the valve control is "Energize to Open". Therefore, loss of power or damage to the solenoid operator could result in unintentional closure of the valve, and loss for Freon flow to the cooling coils.

However, the as-found installed condition is in accordance with the requirements of DCM T-8 (Design Class IE Electrical Raceway Supports) and Drawing No. 050029 (Notes, Symbols and Typical Details for Raceway & Wires), which permits a maximum conduit cantilever length of 4 feet beyond the last support (drawing 050029, sheet 138, Note 41) (the actual cantilever length is 30.0" per field measurement) and requires the installation of flexible conduits (drawing 050029, sheet 10, Note 25) (there is 7-1/2" of flexible conduit per field measurement) at all connections "to motors" and "instrument devices" (e.g., the solenoid-operated valve). Therefore, the installation is per the design requirements.

Recommendation:

Acceptable as-is.

Notification Required: No

Evaluated by: wrh

William R. Hand 10/23/12

Reviewed by: DRC

[Signature] 10/23/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BF-E-104

Equipment Class: 9

Equipment Description: ASW Pump Compartment Exhaust Fans

Location: Building: Intake

Floor El. -3.1

Room, Area: 2-ASP1

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
Bottom 3 anchor bolts are visible and appear to be in good condition. Top 3 bolts also appear adequate.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion is visible on the bottom 3 anchors. Center anchor on top has minor surface corrosion - no impact to structural capacity. Other two top anchors show no signs of corrosion. Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No cracks are visible near any of the 6 anchors.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
The top and bottom anchorage is consistent with plant drawings.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y
No adverse conditions noted.

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No soft targets were seen.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
No block walls or overhead equipment in the area. The HVAC attached to the fan appears to be adequately secured. Light next to the fan could impact during a seismic event, but it is judged that the impact would not have an adverse effect on the functionality of the fan.
9. Do attached lines have adequate flexibility to avoid damage? Y
The attached line uses flexible conduit.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y
No significant interaction effects were identified.

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BF-E-104

Equipment Class: 9

Equipment Description: ASW Pump Compartment Exhaust Fans

Comment:

Bottom anchors inspected visually on 8/29/2012. Upper bolts inspected via remote video on 9/10/2012.

Evaluated by:

KTM, KA

Keri Mow

Date: 10/23/2012

A. K. Chew 10/22/12.

SMM

Scott M. M... 10/22/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BF-E-45

Equipment Class: 10

Equipment Description: 480-V Switchgear Ventilation Exhaust Fans

Location: Building: Auxiliary

Floor El. 163

Room, Area: 2-E-45

Manufacturer, model, Etc. Joy Technologies Inc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No bent, broken, or missing hardware.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
Surface corrosion on the fan pedestal and anchor bolts. See Attachment No. 1 for disposition.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No cracks observed near the anchors.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
The anchorage is consistent with drawing DC 6001884-231-2
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No soft targets
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
No equipment likely to impact the fan
9. Do attached lines have adequate flexibility to avoid damage? Y
The fan and the adjacent duct are braced and anchored. No significant relative displacements are expected.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BF-E-45

Equipment Class: 10

Equipment Description: 480-V Switchgear Ventilation Exhaust Fans

Comment:

The fan is cylindrical in shape and is supported by two steel saddles. The saddles are mounted on a structural steel pedestal that is anchored to the concrete roof slab by 8 bolts.

Walkdown review includes backdraft damper DC-2-23-P-C-VAC-2-BDD-45

Surface corrosion on the fan pedestal and anchor bolts. Surface corrosion is also present on the fan mounts, junction boxes, and flanges.

See Attachment No. 1 for disposition of corrosion on the linkage, ducting, and damper associated with Fan 2-E45..

Evaluated by:

DKN

Daniel Valera

Date:

10/24/2012

DRC

[Signature]

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-BF-E-45

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Coatings failure and surface corrosion was noted on the following components associated with Fan No. E-45:

- linkage
- ducting
- damper
- base plates
- support steel

Evaluation:

Visual examination indicates that this is surface corrosion, and will not impact the structural integrity of these HVAC system components at this time.

Recommendation:

The coatings/corrosion needs to be cleaned, inspected, and repaired.

Notification Required: Yes (50510140)

Evaluated by: W. P. Hoe 9/28/17

Reviewed by: [Signature] 10/22/12

Seismic Walkdown Checklist (SWC)

Status: N

Equipment ID No DC-2-23-M-BF-S-33

Equipment Class: 9

Equipment Description: Aux. Bldg Ventilation Supply Fans

Location: Building: Auxiliary

Floor El. 140

Room, Area: 2-BFS-33

Manufacturer, model, Etc. Buffalo Forge Company BL-AEROFOIL 72P-11587A2

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

- | | |
|---|-----|
| 1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? | N |
| 2. Is the anchorage free of bent, broken, missing or loose hardware?
<i>See question 3 notes.</i> | N |
| 3. Is the anchorage free of corrosion that is more than mild surface oxidation?
<i>Fan skid is heavily corroded and is causing the skid to uplift from the concrete pedestals. See Attachment No. 2 for disposition.</i> | N |
| 4. Is the anchorage free of visible cracks in the concrete near the anchors?
<i>Cracks can be seen in the grout pad near one of the anchors where the skid is corroded. The crack does not extend into the concrete floor.</i> | N |
| 5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.)
<i>(9) 5/8" anchor bolts were used for the fan and motor skids.</i> | N/A |
| 6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions?
<i>See comments for questions 3 & 4.</i> | N |

Interaction Effects

- | | |
|--|---|
| 7. Are soft targets free from impact by nearby equipment or structures?
<i>All soft targets have adequate clearance.</i> | Y |
| 8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment?
<i>Conduit and piping running over the fan are adequately supported. Fluorescent lights in area have positive anchorage (no S-hooks). No ceiling tiles or block walls in the area.</i> | Y |
| 9. Do attached lines have adequate flexibility to avoid damage?
<i>Flexible conduit run into the fan motor.</i> | Y |
| 10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? | Y |

Other Adverse Conditions

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

<i>Anchor bolts for fan belt show mild corrosion. Judged not to have an adverse effect due to the small weight of the fan belt. See Attachment No. 1 for disposition.</i> | Y |
|--|---|

Seismic Walkdown Checklist (SWC)

Status: N

Equipment ID No DC-2-23-M-BF-S-33

Equipment Class: 9

Equipment Description: Aux. Bldg Ventilation Supply Fans

Comment:

Evaluated by:

KTM

Date:

Keri Munn

10/23/2012

SMM

SMM

10/22/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-BF-S-33

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Corrosion was noted on the anchor bolts for the fan belt guard shroud.

Evaluation:

These anchor bolts are for the vertical dead load supports of the protective shroud around the belt between the motor and the fan. This shroud is a personnel protective device to prevent inadvertent contact with the rotating fan motor and belt; it serves no safety-related function. There is adequate anchorage of the shroud to the fan housing, and these vertical legs are provided only for dead load support of the shroud -- there are essentially no vertical or horizontal loads on these anchors. Therefore, the corrosion on these anchor bolts does not impact the operability of fan S-33.

Therefore, this condition does not impact the operation of DCP, but the anchor bolts should be replaced and the baseplate repainted.

Notification Required: Yes (50509028)

Evaluated by: _____

S.M. [Signature] 10/22/12

Reviewed by: _____

A. [Signature] 10/22/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-BF-S-33

Attachment 2, Page 1 of 1

Licensing Basis Evaluation

Issue:

The fan mounting skid is heavily corroded, which is causing the steel beam to lift upwards from the concrete, and there is cracking of the grout pad.

Evaluation:

This condition represents severe degradation of the skid and anchorage which cannot be justified as acceptable in its current condition and may not be able to perform its intended function. Notification documents condition, but additional investigation required to address functionality.

Notification Required: Yes (50509052)

Evaluated by: William R. Horne WN15 8/28/12

Reviewed by: [Signature] SOM9 10/22/12

Seismic Walkdown Checklist (SWC)

Status: **Y**

Equipment ID No DC-2-23-M-BF-S-45

Equipment Class: 9

Equipment Description: 480-V Switchgear Ventilation Supply Fans

Location: Building: Auxiliary

Floor El. 163

Room, Area: 2-E-45

Manufacturer, model, Etc. Joy Technologies Inc

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

- | | |
|---|-----|
| 1. Is the anchorage configuration verification required (i.e. Is the Item one of the 50% of SWEL Items requiring such verification)? | N |
| 2. Is the anchorage free of bent, broken, missing or loose hardware?
<i>No bent, missing, or broken hardware.</i> | Y |
| 3. Is the anchorage free of corrosion that is more than mild surface oxidation?
<i>Surface corrosion was observed on the fan mounts, ducting, baseplates, top of damper housing, pedestal, and anchor bolts. See Attachment No. 1 for disposition.</i> | Y |
| 4. Is the anchorage free of visible cracks in the concrete near the anchors?
<i>No cracks observed near the anchors.</i> | Y |
| 5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) | N/A |
| 6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? | Y |

Interaction Effects

- | | |
|--|---|
| 7. Are soft targets free from impact by nearby equipment or structures?
<i>No soft targets</i> | Y |
| 8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment?
<i>No credible interaction sources. The adjacent ducts are well supported.</i> | Y |
| 9. Do attached lines have adequate flexibility to avoid damage?
<i>The electrical power cable has a flex connection. The fan and ducts have stiff supports. No significant relative displacement is expected.</i> | Y |
| 10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? | Y |

Other Adverse Conditions

- | | |
|---|---|
| 11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? | Y |
|---|---|

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-BF-S-45

Equipment Class: 9

Equipment Description: 480-V Switchgear Ventilation Supply Fans

Comment:

2-S-45 is a cylindrically shaped fan that is supported by two steel saddles. The saddles are mounted on a structural steel pedestal which is anchored to the concrete roof slab with 8 anchor bolts.

Evaluated by:

DKN

Daniel K. Adams

Date:

10/24/2012

DRC

D.R. Ch...

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-BF-S-45

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Coatings failure and surface corrosion was noted on the following components associated with Fan No. S-45:

- linkage
- ducting
- damper
- base plates
- anchor bolts
- support steel

Evaluation:

Visual examination indicates that this is surface corrosion, and will not impact the structural integrity of these HVAC system components at this time.

Recommendation:

The coatings/corrosion needs to be cleaned, inspected, and repaired.

Notification Required: Yes (50510141)

Evaluated by: _____

William R. Stone 9/28/12

Reviewed by: _____

DR. [Signature] 10/22/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-HX-CR37

Equipment Class: 10

Equipment Description: Control Room Ventilation Air Conditioning Condensers

Location: Building: Auxiliary

Floor El. 154

Room, Area: 2-CR-37

Manufacturer, model, Etc. Trane

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
The unit is bolted to (4) base structural channel members by (4) 1/2" bolts (1 at each corner of the main section). This appears to be the weak point in the anchorage load path. Each of the stiffened support channels is bolted to the raised concrete pad by (2) 1/2" bolts (8 total). The inlet extension has an additional support at the two corners that provide vertical and lateral restraint. These are welded to the embedded angle frame that envelops the raised pad. Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
Moderate level of surface corrosion all around base of unit as well as the anchor bolts. The pneumatic actuators as well as the copper tubing and brazed copper pipe are also moderately corroded. For disposition see Attachment 2. There is heavy corrosion on the unit skid. For disposition see Attachment 1.
4. Is the anchorage free of visible cracks in the concrete near the anchors?
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
Anchorage is consistent with drawing 443333-1.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
Soft targets limited to small diameter copper tubing and all overhead items appear to be adequately anchored.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Room lighting supported by pipe sections with ball and socket connections, or in one case closed hook. All have safety chains for additional protection. Reinforced masonry wall forming West wall of room has additional support at both the base and the top. Conduit and pipe in room is well supported.
9. Do attached lines have adequate flexibility to avoid damage? Y
Flexible hose connections at all connections to unit.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-M-HX-CR37

Equipment Class: 10

Equipment Description: Control Room Ventilation Air Conditioning Condensers

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/25/2012

DRC

D.R. Carr

10/23/2012

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-HX-CR37

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Corrosion was found at the bottom door frame of the filter section of Unit 2 Condenser CR37.

Evaluation:

The corroded section was found at the bottom of the north side door frame of the filter section. The corrosion is about 4.5" long. The filter section only houses light weight filters. The corroded section does not support any heavy components, such condenser tubing or a motor. Therefore, the corrosion has no adverse effect on the structural integrity of CR37. The seismic evaluation of Condenser CR37 remains valid and the condenser remains capable of performing its intended design function.

Recommendation:

Repair/replace housing material and recoat.

Notification Required: Yes (50519813).

Evaluated by:

Patrick Huang

10/23/12

Reviewed by:

J.R. [Signature]

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-M-HX-CR37

Attachment 2, Page 1 of 1

Licensing Basis Evaluation

Issue:

Moderate surface corrosion was found on the pneumatic actuators and associated copper tubing for the condenser unit.

Evaluation:

The corrosion is confined to the surface of these components at this time, with no impact on their structural integrity. These components are capable of performing their intended design functions in their current condition.

Recommendation:

Clean, prepare and recoat these components.

Notification Required: Yes (50519823).

Evaluated by: DRC

[Signature]

10/23/2012

Reviewed by: WRT

[Signature]

10/23/2012

Seismic Walkdown Checklist (SWC)

Status: N

Equipment ID No DC-2-23-P-D-VAC-2-FCV-5045

Equipment Class: I

Equipment Description: 480-V Switchgear Ventilation Shutoff (Discharge) Dampers

Location: Building: Auxiliary

Floor El. 163

Room, Area: 2-E-45

Manufacturer, model, Etc. Quality Air Design damper, Asco actuator

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No bent, broken, or missing hardware.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? N
Mild to significant corrosion on the actuator steel support, actuator, damper top plate, and damper flange bolts. See Attachment No. 1 for disposition.
4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A
The damper is mounted in line.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y
The damper is securely mounted to the fan and duct.

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No credible interaction sources
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Conduit and duct is well supported. The adjacent steel ladder is adequately anchored to the concrete stair well wall.
9. Do attached lines have adequate flexibility to avoid damage? Y
The power cable has a flex connection.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: N

Equipment ID No DC-2-23-P-D-VAG-2-FCV-5045

Equipment Class: I

Equipment Description: 480-V Switchgear Ventilation Shutoff (Discharge) Dampers

Comment:

The damper is line mounted between fan 2-S-45 and ducting. Both the fan and ducting are rigidly supported.

See Attachment No. 1 for disposition of the corrosion on the supporting steel, linkage, ducting, damper, base plate, and top plate of the damper.

Evaluated by:

DKN

Daniel Phillips

Date:

10/24/2012

DRC

D.P. [Signature]

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-FCV-5045

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Surface corrosion was noted on the following components associated with Damper No. FCV-5045:

- actuator steel support
- actuator
- damper top plate
- damper flange bolts

Evaluation:

The conditions as noted do not affect seismic qualification of the component to perform its function based on the current inspections.

Recommendation:

The coatings/corrosion needs to be cleaned, inspected, and repaired.

Notification Required: Yes (50510117)

Evaluated by: Wen R. Hone 9/28/12

Reviewed by: [Signature] 10/22/12

Seismic Walkdown Checklist (SWC)

DRC 11/19/12

Status: ~~Y~~ N 3JK 11/20/12

Equipment ID No DC-2-23-P-D-VAC-2-MOD-10

Equipment Class: 8

Equipment Description: Control Room Ventilation Supply Fan Discharge Dampers

Location: Building: Auxiliary

Floor El. 154

Room, Area: 2-CR-37

Manufacturer, model, Etc. Barber Colman Electric Actuator

Instructions for Completing Checklist

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Anchorage

- | | |
|--|-----|
| 1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? | N |
| <i>The damper duct and actuator support frame are supported off the floor.</i> | |
| 2. Is the anchorage free of bent, broken, missing or loose hardware? | Y |
| 3. Is the anchorage free of corrosion that is more than mild surface oxidation? | Y |
| 4. Is the anchorage free of visible cracks in the concrete near the anchors? | Y |
| 5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) | N/A |
| <i>Actuator support frame and actuator mounting is consistent with drawing 513521-1.</i> | |
| 6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? | Y |

Interaction Effects

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

Other Adverse Conditions

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

Very heavy unsupported channel stiffeners both top and bottom add substantial weight to the system which is cantilevered off the connecting duct. For disposition see Attachment 1.

~~Y~~
N
DRC 3JK
11/19/12 11/20/12

Seismic Walkdown Checklist (SWC)

DRC 11/19/12
N TRK
X 11/20/12
Status:

Equipment ID No DC-2-23-P-D-VAC-2-MOD-10

Equipment Class: 8

Equipment Description: Control Room Ventilation Supply Fan Discharge Dampers

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/25/2012

DRC

A.R. [Signature]

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 1 of 18

Licensing Basis Evaluation

Issue:

Motor Operated Damper DC-2-23-P-D-VAC-2-MOD-10 was modified by adding structural steel channel stiffeners (approximately 19# per linear foot) on the top and bottom of the damper. The channel sections also extend to and stiffen the damper immediately adjacent to MOD-10 (DC-2-23-P-D-VAC-2-MOD-10A). Reference PG&E Drawing 59353 for a layout of the dampers. The concern is that the heavy channel stiffeners may adversely impact the seismic qualification of the ducting/duct supports associated with the MOD Dampers.

Evaluation:

A review of the seismic calculation for the ducting/duct supports associated with the MOD Dampers (Calculation HV-86, Revision 0) shows that the additional mass from the channel sections was not considered in the qualification of the ducting/duct supports. A copy of this calculation has been revised (marked up) such that it now accounts for this extra mass. This markup is found under sheets 2 thru 18. The mark up demonstrates that the ducting/duct supports would remain seismically qualified (with significant margin) if the additional mass from the channel stiffeners is considered.

Therefore, this condition has no impact on the operation of DCPD.

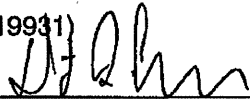
Recommendation:

Calculation HV-86 will require formal revision to account for the additional mass from the channel stiffeners.

Notification Required: Yes (50519931)

Evaluated by:


DRC



10/22/2012

Reviewed by:

WRH



10/22/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 2 of 18

Sheet 1/81

Date: 9/27/12

Markups By: BMO4

HVAC Duct Support Nos. 30 and 33N are impacted due to unaccounted weight of Duct stiffeners. (70"x20").

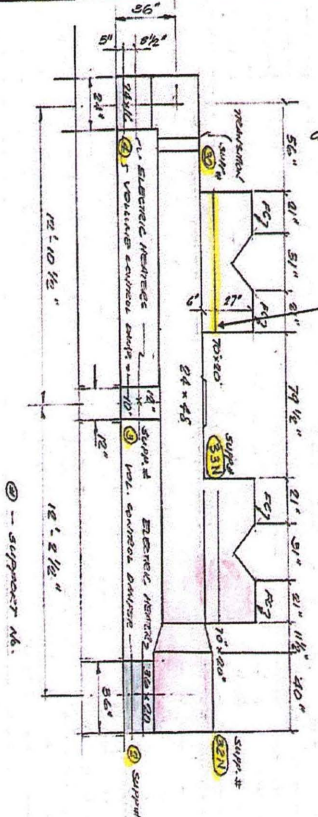
Design Drawing
02-0000

PACIFIC GAS AND ELECTRIC COMPANY
GENERAL COMPUTATION SHEET

SHEET NO. 1 OF 81 SHEETS
JOB NO. HV-86
FILE NO. REV. D
LOCATION REV. D

SUBJECT HVAC DUCT & DUCT SUPPORTS EVALUATION - AUXILIARY BLDG.
HORS # 59353-2, 3, 4, 30, 30N & 33N

MADE BY LCJ DATE 11/2/82 CHECKED BY VEL APPROVED BY _____



REFERENCE

- DESIGN VERIFICATION PROCEDURES FOR SEISMIC REVIEW OF CLASS I HVAC DUCTS
- CALC. # 4, REV. D
- DESIGN AID # 1 FOR DUCT C. 31 DUCT HV-1 FILE # 52.7, 12.3 (REV. 11)

- DUG # 59353 WITH WALK DOWN GROUP MARK-UPS

NOTE: THE FOLLOWING MODIFICATIONS ARE TAKEN INTO CONSIDERATION IN EVALUATING THE DUCTWORK SYSTEM:

1. ADD NEW SUPPORTS # 59353-32N & 33N
2. EXISTING SUPPORT # 59353-30 IS MODIFIED BY WELDING THE DIAGONAL BRACES TO THE VERTICAL MEMBERS. SEE SHT. 60.

IN EVALUATING THE SYSTEM, ABOVE MODIFICATIONS ARE ASSUMED TO HAVE BEEN COMPLETED.

5 7 9 0 2 9 9 0 0 0

Seismic Walkdown Checklist (SWC)

Design Drawing: GENERAL COMPUTATION SHEET
 SHEET NO. 3 OF 61 SHEETS
 PACIFIC GAS AND ELECTRIC COMPANY
 JOB FILE NO. 111-86
 LOCATION REM 0
 PROJECT VAC DUCT & DUCT SUPPORT EVALUATION - AUXILIARY BLDG.
 HERS # 61353-2, 3, 4, 50, 51, 52, 53, 54
 MADE BY BCJ DATE 11/2/92 CHECKED BY VEL APPROVED BY _____

5,12 P₁₂ = $\left[\frac{1}{2}(70)(24+48)(2)(.0075) + \frac{1}{2}(70)(24+48)(2)(.0075) \right] \cdot 11$
 = 111.7 #
 (1/2 WT OF SPANS @ 5 & 12)
 4,8 P₁₂ = $\frac{2(7) + 68 + (70+20)(2)(.0075)(6 + \frac{1}{2}(12+27)(.14))}{(WT OF DAMPERS + (WT OF SPAN @ + 1/2 WT OF @))} = 132.4 \#$
 7,14 P₁₇ = $\frac{(1/2)(27)(.0075)(70+20)(2)(.14)}{(WT OF 1/2 SPANS 6, 13)} = 39 \#$
 7, 8 P₈ = $\left[\frac{1}{2}(70)(24+48)(2)(.0075) + \frac{1}{2}(26.75)(12+12)(2)(.0075) + \frac{1}{2}(17)(24+48)(2)(.0075) \right] \cdot 11.45$
 = 74.4 #
 (1/2 WT OF SPANS 7 & 8 + ADDITIONAL WEIGHT ASSUMED FOR THE 12" x 10" DUCT.)

11 P₈ = $\left[\frac{1}{2}(12)(24+48)(2)(.0075) + \frac{1}{2}(53.5)(24+48)(2)(.0075) \right] \cdot 11$
 + 150 = 212.0 #
 (1/2 WT OF SPANS 10, 11 + WT OF DAMPER # 33)
 15 P₁₀ = $\left[\frac{1}{2}(70)(24+48)(2)(.0075) + \frac{1}{2}(26.75)(24+24)(2)(.0075) \right] \cdot 11$
 + 71 = 157.8 #
 (1/2 WT OF SPANS 14 & 15 + WT OF SUPPORT # 32)
 16 P₁₀ = $\left[\frac{1}{2}(26.75)(36+24)(2)(.0075) + \frac{1}{2}(9.75)(36+24)(2)(.0075) \right] \cdot 11$
 + 40 + 53 = 174.4 #
 (1/2 WT OF SPAN 15 & 16 + WT OF DAMPER + DAMPER)
 17 P₁₁ = $\left[\frac{1}{2}(9.75)(36+24)(2)(.0075) \right] \cdot 11 + 44 = 99 \#$
 (1/2 WT OF SPAN @ + WT OF SUPPORT # 2)

SUMMARY OF R VALUES (AS CALCD ON THE FOLLOWING PAGES):

JOINT	RFX = RFY	FIXED IN	(p. #)
1	RFX = RFY = 16.67	FIXED IN	(p. 4)
4	RFX = 36.36, RFY = 250	2-DIR.	(pp. 25-27)
11	RFX = 11.43, RFY = 19.05	FIXED IN	(p. 38-42)
15	RFX = RFY = 94.34	RFX = 616	(p. 4)
17	RFX = RFY = 16.67		(p. 4)

* ACTUAL IS 23.53, SAY OK.

Markups By: BMD4 Date: 9/27/12 Sheet 3/81

Tributary weight for Duct Support No. 30
 P₄ = 176.4 lbs.
 $\frac{1}{2}(P_2 + P_3) = \frac{1}{2}(87 \text{ lbs.} + 17 \text{ lbs.}) = 52 \text{ lbs.}$
 $\frac{1}{2}(P_5 + P_6 + P_7) = \frac{1}{2}(111.7 \text{ lbs.} + 138.4 \text{ lbs.} + 39 \text{ lbs.}) = 144.5 \text{ lbs.}$
 $\frac{1}{2}(P_1) = 38.2 \text{ lbs.}$
 P₃₀ = 176.4 lbs + 144.5 lbs + 52 lbs + 38.2 lbs = 411.1 lbs.
 adding two 70" stiffeners at w = 19 #
 P'₃₀ = 411.1 lbs. + $\frac{1}{2}(2 \times 70" / 12 \times 19 \text{ #}) = 522 \text{ lbs.}$
 % increase = $522 / 411.1 = 127\%$

Tributary weight for Duct Support No. 35N
 P₁₁ = 210.0 lbs.
 $\frac{1}{2}(P_{12} + P_{13} + P_{14}) = \frac{1}{2}(111.7 \text{ lbs.} + 138.4 \text{ lbs.} + 39 \text{ lbs.}) = 144.5 \text{ lbs.}$
 $\frac{1}{2}(P_5 + P_6 + P_7) = \frac{1}{2}(111.7 \text{ lbs.} + 138.4 \text{ lbs.} + 39 \text{ lbs.}) = 144.5 \text{ lbs.}$
 $\frac{1}{2}(P_1) = 38.2 \text{ lbs.}$
 P₃₅ = 210.0 lbs + 2 x 144.5 lbs + 38.2 lbs = 537.2 lbs.
 adding two 70" stiffeners at w = 19 #
 P'₃₅ = 537.2 lbs. + $\frac{1}{2}(2 \times 70" / 12 \times 19 \text{ #}) = 648 \text{ lbs.}$
 % increase = $648 / 537.2 = 121\%$ ← use 127%.

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 4 of 18

Sheet 32/31

Date: 9/27/12

Markups By: BMO4

PACIFIC GAS AND ELECTRIC COMPANY
 GENERAL COMPUTATION SHEET
 SHEET NO. 32 OF 31 MARKUPS BY BMO4
 DATE 9/27/12 PROJECT NO. DC-2-23-P-D-VAC-2-MOD-10

TRAIL DUCTS AND SUPPORTS, SUMMARY BLOG.

59883-2, 3, 6, 30, 32A, 33A
 1A-T
 12/16/82
 VSL
 LOKO FACTORY:
 MOMENT, $M_x = 1.070 = 2675$
 $M_y = 1.004$
 TRANSVERSE, $M_z = 1.059 + (0.67)(2) = 303.3$
 $M_x = 1.004$
 LONGITUDINAL, $M_y = 1.055 = 13.5$
 $M_z = 1.004$

CHECK SUPPORT MEMBER STRESSES FOR EXISTING FORCES
 AXIAL P = $1.002 \times 2675 + 1.002 \times 303.3 + 1.033 \times 12.3$
 $= 1.186 \text{ K}$
 SHEAR Y = $1.001 \times 13.3 + 0.013 \text{ K}$
 SHEAR Z = $1.002 \times 303.3 + 0 = 0.1007 \text{ K}$
 $M_y = 1.059 \times 303.3 + 1.003 \times 13.5 = 13.93 \text{ K-K}$
 $M_z = 1.013 \times 13.3 = 0.155 \text{ K-K}$

BENDING STRESS
 $f_x = \frac{M_y}{S_y} = \frac{13.93}{1.93} = 7.218 \text{ ksi}$
 $f_y = \frac{M_z}{S_z} = \frac{0.155}{0.212} = 0.729 \text{ ksi}$
 $\Sigma f_x = 7.218 + 0.729 = 7.947 \text{ ksi}$
 $P_0 = 16 (1.6)(96) = 2456 \text{ ksi}$

AXIAL STRESS
 $f_a = \frac{1.186}{1.59} = 0.746 \text{ ksi}$
 $\frac{f_x}{P} = \frac{2(7.947+7.947)}{2456} = 154$

INTERACTION EQN
 $\frac{0.746}{10.08} + \frac{1.766}{341.96} = 0.38 < 1.0 \text{ ; ok}$
 $F_0 = 16 (0.70) = 11.2$

Interaction Equation:
 $0.3(127\%) = 0.38 < 1.0 \text{ ok}$

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

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Sheet 34/81

Date: 9/27/12

Markups By: BMO4

PACIFIC GAS AND ELECTRIC COMPANY
GENERAL COMPUTATION SHEET

PROJECT NO. 34-81
LINE NO. HV-86
LOCATION REV.0

HVAC DUCTS AND SUPPORTS, AUXILIARY ELDG
59353-2, 3, 4, 30, 32A, 32B
12/1 DATE 12/6/82 CHECKED BY VRL

EVALUATE MEMBER ⓐ L3x2x3/8 AREA 5.781
SY = .371
IZ = .408
L = 23.50"

Z(V+EW) LOAD.

MEMBER FORCES ⓐ
USE THE SAME LOAD FACTORS
PANAL = 0 (NEGLECTED)
BY INSPECTION, ALL FORCES = 0
MEMBER IS OK FOR BOTH LOAD
COMBINATIONS 1 (V+EW) AND 2 (V+NS)

EVALUATE MEMBERS ⓑ AND ⓓ L2 1/2 x 2 1/2 x 1/4
A = 119 J = .394
IZ = .291

1 (V+EW) USE THE SAME LOAD FACTORS:
AXIAL P = 0.004 x 12.3 = 0.05 K
M2 = .00402 x 12.3 = 0.05 K

2 (V+NS) USE THE SAME LOAD FACTORS:
AXIAL P = .004 x 200.3 = 0.801 K
M2 = .00402 x 200.3 = 0.817 K

AXIAL STRESS
f_A = $\frac{.801}{119} = 0.673$ KSI
 $\frac{EL}{R} = \frac{2.0 (815)}{.491} = 169$ F_A = 1.6 (5.23) = 8.37 K

BENDING STRESS
f_b = $\frac{M}{J} = \frac{.817}{.394} = 2.074$ KSI
F_b = 1.6 (1.6 F_y) = 34.56

INTERACTION EQUATION
 $\frac{0.673}{8.37} + \frac{2.074}{34.56} = 0.14 < 1.0$; OK

MEMBERS ⓑ & ⓓ ARE OK.

Interaction Equation:

$$0.14(1.27) = 0.18 < 1.0 \text{ ok}$$

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 6 of 18

Sheet 35/81

Date: 9/27/12

Markups By: BMO4

PROJECT: PACIFIC GAS AND ELECTRIC COMPANY
 SHEET NO: 35 OF 81
 DATE: 9/27/12
 DRAWN BY: BMO4
 CHECKED BY: BMO4
 GENERAL COMPUTATION SHEET
 TITLE: HMC BUCKS AND SUPPORTS, AIRWAY #100

SPRINGS - 2, 3, 4, 30, 32N, 33N
 AIRWAY #100
 DATE: 12/16/82
 CHECKED BY: VBC
 CHECKS EXIST SUPPORT CONNECTIONS

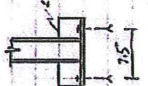
VERTICAL + ELEM. LOADING (TRANSX)
 VERTICAL: 2, 3, 3

$F_x = 0.02 \times 2675 + 0.02 \times 203.3 + 0.02 \times 13.3 = 1.185$
 $F_y = 0.02 \times 2675 + 0.02 \times 203.3 + 0 = 0.607$
 $M_x = 0.029 \times 203.3 + 0.0029 \times 13.3 = 13.93$
 $M_y = 0$

VERTICAL + NS LOADS (CONCRETE/STEEL)
 $F_x = 0.001(2005) = \text{NEGLECTABLE}$
 $F_y = 0.05 \times 2675 + 0.05 \times 49 + 0.002 \times 200.3 = 139$
 $M_x = 0.059 \times 2675 + 0.002 \times 49 = 158$
 $M_y = 0.059 \times 2675 + 0.002 \times 49 = 158$
 $M_z = 0$

BY COMPARISON, V+EW LOAD IS MORE CRITICAL.

INTERACTION
 $\text{Tension / fact} = \frac{1.185}{2} + \frac{15.93}{7.5}$
 $= 2.95 \text{ k / fact}$
 $\text{STRESS / fact} = \frac{139}{2} = 69.5$
 $\frac{1}{8} \times 8000 \text{ psi} = 1000 \text{ psi}$
 $P_1 = 5.6 \text{ F}$
 $M_1 = 5.0 \text{ F}$



INTERACTION
 $\left(\frac{2.95}{3.6}\right)^{1/2} + \left(\frac{69.5}{1000}\right)^{1/2} = 0.55 < 1.0$
 $\therefore \text{OK}$
 $\text{CHECK: } 2.3 \times 2 \times 7/16 = 1970 \text{ LBS} < 3456 \text{ LBS}$
 $f_b = \frac{L}{J} = \frac{13.93}{707} = 1970 \text{ LBS} < 3456 \text{ LBS}$
 $\therefore \text{OK}$

Interaction Equation:
 $0.55(127\%) = 0.70 < 1.0 \text{ OK}$
 Check $1.3 \times 5/16$
 $19.70(127) = 25.0 \text{ ksi} < 34.56 \text{ ksi OK}$

Seismic Walkdown Checklist (SWC)

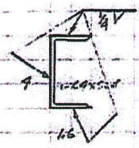
PACIFIC GAS AND ELECTRIC COMPANY
 GENERAL COMPUTATION SHEET
 SHEET NO. 36-81
 REV. 0
 PROJECT: HVAC DUCTS AND SUPPORTS, AUXILIARY BLDG
59553-2, 3, 4, 30, 32A, 32B
 DATE: 12/6/82 BY: VBL

Markups By: BMO4

Date: 9/27/12

Sheet 36/81

CHECK WELD CAPACITY



(CONSERVATIVE WELD PROPERTIES ARE USED TO SIMPLIFY CALCULATIONS)
 $A_w = 2(16) \times 4 = 72 \text{ in}^2/\text{in}$
 $S_w = 4(16) + \frac{4^3}{6} = 9.07 \text{ in}^3/\text{in}$
 $A_x = 2 \times 16 = 3.2 \text{ in}^2/\text{in}$
 $f_1 = \frac{1.185}{7.2} + \frac{12.93}{9.07} = 1.70 \text{ ksi}$
 $f_2 = \frac{6.07}{3.2} = 1.9 \text{ ksi}$
 $f = \sqrt{f_1^2 + f_2^2} = 1.71$

WELD REQ'D = $\frac{1.71}{1.6(0.707)(21)} = 0.07 < 0.25$
 . ok

Weld Req'd:
 $0.07(1.27) = 0.09 < 0.25 \text{ ok}$

CHECK JOINTS ① & ⑩

FORCES

VERTICAL + EW LOADING

$F_x = .002(13.3) = .03 \text{ k}$
 $F_y = .0034(13.3) = .05 \text{ k}$

VERTICAL + NS LOADING

$F_x = .002(200.3) = .401 \text{ k}$
 $F_y = .0034(200.3) = .681 \text{ k}$

PULL OUT / BOLT = $.681 \text{ k} < 3.6 \text{ k}$. ok
 REFER TO CALL OF BOLTS FOR JOINTS

Pull-out/Bolt = $0.681(1.27) = 0.865 < 3.6 \text{ k ok}$

CHECK JOINTS ② & ⑦ : NOTE: AS A RESULT OF A PRELIMINARY ANALYSIS OF THESE JOINTS, THE BOLTED CONNECTION WAS FOUND INADEQUATE, THESE JOINTS WILL BE MODIFIED BY MAKING IT A WELDED CONNECTION AS SHOWN ON SH. 60 OF THIS CALCULATION. NOTE THAT THIS HAS BEEN TAKEN INTO CONSIDERATION IN THE STRUDL FRAME ANALYSIS ON PP 26-30.

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

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Sheet 37/81

Date: 9/27/12

Markups By: BM/04

37-81
 PACIFIC GAS AND ELECTRIC COMPANY
 GENERAL COMPUTATION SHEET
 DATE: 12/16/82
 REVISION: 11/2/82

HMC OVERS AND SUPPORTS, AUXILIARY BLDG.
 59253-2, 5, 8, 30, 35N, 32N
 VRL



FORCES IN VTS @ 1, 2

$$\sum (V_1 \text{ EW})$$

$$V_1 = .0041 (12.5) = .051 \text{ K}$$

$$V_{TOTAL} = .004 (12.5) = .05 \text{ K}$$

$$\sum (V_{TENS})$$

$$V_2 = .001 (200.3) = .201 \text{ K}$$

$$V_{TOTAL} = .001 (200.3) = .201 \text{ K}$$

SEE REMARKS FOR ALL GIVEN IN LOCAL COMPONENTS AND WE WANT TO CHECK WELD ON LOCAL YR PUMP, DIVER FORCES BY 201.577

$$V_2 = \frac{221}{141577} = 1.536 \text{ K}$$

$$V_{TOTAL} = 1.536 \text{ K}$$

WELD PROPERTIES

$$M_w = 2(2.5) \cdot 5.0$$

$$S_w = 6(1) = 24 \left(\frac{2.5}{141577} \right) = 117 \text{ IN}^3$$

$$f_t = \frac{1.536}{5.0} + \frac{1.536}{117} = 0.431$$

WELD REQ'D = 0.018"
 USE 3/16" WELD
 OK

Weld Req'd:
 $0.018(1.27) = 0.023 < 3/16" \text{ OK}$

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 9 of 18

Sheet 45/81

Date: 9/27/12

Markups By: BMO4

45-81
HV-86
REV D

PACIFIC GAS AND ELECTRIC COMPANY
GENERAL COMPUTATION SHEET

HVAC DUCTS AND SUPPORTS, AUXILIARY BLDG
59352-2, 3, 4, 30, 32A, 33A
D-G 12/6/82 VRL
EVALUATE MEMBERS 1, 2, 5, 6

FORCES

AXIAL LOAD, P = .002 (631) + .002 (3915) + .0043 (2.5)
= 2.427 K

SHEAR Y = .00197 (3915) + .0023 (2.5)
= 0.744 K

SHEAR Z = .0015 (2.5) = .00375 K

M_Y = .00018 (631) + .00032 (3915) + .0405 (2.5)
= 0.340 in-K

M_Z = .02509 (3915) + .00940 (2.5)
= 9.83 in-K

BENDING STRESS:

$f_{o2} = \frac{M_z}{S_z} = \frac{9.83}{2.10} = 4.681 \text{ ksi}$

$f_{o1} = \frac{M_y}{S_y} = \frac{0.340}{2.10} = 0.162 \text{ ksi}$

$f_{o3} = 5.023 \text{ ksi}$ $F_o = 1.6(1.27) = 2.055$

AXIAL STRESS:

$f_a = \frac{P}{A} = \frac{2.427}{2.59} = 0.937 \text{ ksi}$

$\frac{KL}{r} = \frac{2.0(5.102 + 5.876)}{1.10} = 100$

$F_a = 1.6(12.47) = 19.95 \text{ ksi}$

INTERACTION EQU:

$\frac{4.681}{2.055} + \frac{.937}{19.95} = 0.183 < 1.0 \therefore \text{OK}$

SHEAR STRESS:

$f_v = \frac{0.744}{3 \times 2.25} = 0.110 \text{ ksi} < 1.50 \text{ ksi} = 2000 \text{ psi}$
 $\therefore \text{OK}$

Interaction Equation:
0.183(1.27) = 0.232 < 1.0 ok

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

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Sheet 4681

Date: 9/27/12

Markups By: BMD4

46-81
REV 85
REV 0

GENERAL COMPUTATION SHEET

ANCO BOLTS AND SUPPORT, AUXILIARY P-200

DATE: 10/16/12

BY: VBL

LOAD FACTORS

VERTICAL, $L_1 = \frac{1.4D + 1.7Q}{1.0}$

TRANSVERSE, $L_2 = \frac{1.4D + 1.7Q}{1.0}$

LONGITUDINAL, $L_3 = \frac{1.4D + 1.7Q}{1.0}$

COMPARISON VALUES TO MAKE OF L_1 (MIN)

AND BY INSPECTION MEMBERS ARE OK.

EVALUATE MEMBERS @ ϕ $L_1 \times L_2 \times L_3$

FORCES

AXIAL $F = 0.001(3915) + 0.004(205) = 0.392 \text{ k}$

STRESS $F = 0.012(3915) + 0.004(205) = 0.655 \text{ k}$

STRESS $Z = 10000(2.5) + 0.012(3915) + 0.004(205) = 25000 \text{ k}$

$M_1 = 10000(2.5) + 0.012(3915) + 0.004(205) = 25000 \text{ k}$

$M_2 = 0.295(3915) + 0.007(205) = 9189 \text{ k}$

BONDING STRESS

$f_{b1} = \frac{M_1}{S} = \frac{25000}{125} = 200 \text{ ksi}$

$f_{b2} = \frac{M_2}{S} = \frac{9189}{125} = 73.5 \text{ ksi}$

$f_{b3} = \frac{M_3}{S} = \frac{101}{125} = 0.808 \text{ ksi}$

$f_{b4} = \frac{M_4}{S} = \frac{7938}{125} = 63.5 \text{ ksi}$

$f_{b5} = \frac{M_5}{S} = \frac{8456}{125} = 67.6 \text{ ksi}$

AXIAL STRESS

$f_a = \frac{F}{A} = \frac{0.392}{0.155} = 2.53 \text{ ksi}$

$f_a = \frac{0.655}{0.155} = 4.22 \text{ ksi}$

$f_a = \frac{2.5}{0.155} = 16.1 \text{ ksi}$

$f_a = \frac{4.22}{0.155} = 27.2 \text{ ksi}$

$f_a = \frac{63.5}{0.155} = 410 \text{ ksi}$

$f_a = \frac{67.6}{0.155} = 436 \text{ ksi}$

INTERACTION FORM

$\frac{7938}{4456} + \frac{153}{2056} = 0.34 / 1.10 = 0.31$

STRESS STRESS - NEGLIGIBLE

Interaction Equation:
 $0.24(1.27) = 0.30 < 1.0$ ok

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

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Sheet 4881

Date: 9/27/12

Markups By: BMO4

48.81
 PACIFIC GAS AND ELECTRIC COMPANY
 GENERAL COMPUTATION SHEET
 Hvac DUCT AND SUPPORTS, AUXILIARY BLDG.
 57253 - 2, 3, 4, 30, 32W, 33W
 A-CF 12/15/92 VISL

CHECK DUCT SUPPORT CONNECTIONS

Σ(V+EW)

$F_y = .002(62) + .0020(2915) + .00425(2.5)$
 $= 2.447 \text{ k}$

$F_x = .00199(2915) = .779 \text{ k}$

$M_x = .00018(62) + .00022(2915) + .00002(2.5)$
 $= .327 \text{ in-k}$

$M_y = .00021(62) + .00025(2915) + .00467(2.5)$
 $= 1.155 \text{ in-k}$

$M_z = .0187(2915) + .00091(2.5)$
 $= 7.92 \text{ in-k}$

Σ(V+WS)

$F_y = .002(62) + .0020(2915) + .00425(2.5)$
 $= 1.55 \text{ k}$

$F_x = 1.04 \text{ k}$

$M_x = .00018(62) + .00022(2915) + .00467(2.5)$
 $= 2.355 \text{ in-k}$

$M_y = .00021(62) + .00025(2915) + .00467(2.5)$
 $= 1.129 \text{ in-k}$

CHECK Σ(V+EW) - GRAPE CEMENT.

TENSION / FOOT = $\frac{2.447}{4} + \frac{2.27 + 7.22}{2(70)} = 1.122 \text{ } \frac{\text{lb}}{\text{in}^2}$

COMPRESSION / FOOT = $\frac{0.779}{4} + \frac{0.155}{2(70)} = 0.205 \text{ } \frac{\text{lb}}{\text{in}^2}$

INTERACTION

$\left(\frac{1.122}{3.6} \right)^2 + \left(\frac{0.205}{3.0} \right)^2 = 0.16 < 1.0$

∴ OK

Interaction Equation:
 $0.16(1.27) = 0.20 < 1.0 \text{ OK}$

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 12 of 18

Sheet 48/51

Date: 9/27/12

Managers By: BMD4

4-11-12
M-28
B-28

MANAGERIAL COMMENTS: ALL OK

ALL OK, BUT CHECK THE CONNECTIONS, PARTICULARLY THE

1/2" W/ 1/2" DIA. WELDS

$$L = \frac{W}{S} = \frac{2.98}{100 \times 0.005} = 11.92 \text{ ksi} < 34.56 \text{ ksi}$$

11.92 ksi < 34.56 ksi
OK

34.56 ksi

$$L = 11.24 \text{ ksi} (1.71) = 19.3 \text{ ksi} < 34.56 \text{ ksi}$$

19.3 ksi
OK
DRC
10/24/2012

CHECK THE WELDED CONNECTION

ALL OK, BUT CHECK THE CONNECTIONS, PARTICULARLY THE



$$f_1 = \frac{2.98}{12} = 0.248 \text{ ksi}$$

$$f_2 = \frac{2.79}{12} = 0.232 \text{ ksi}$$

$$f = \sqrt{f_1^2 + f_2^2} = 0.34 \text{ ksi}$$

$$\text{WELD REQ'D: } 0.005 \text{ S} (1.27) = 0.006 \text{ S} < 1/2 \text{ DIA. OK}$$

WELD REQ'D:
0.005 S (1.27) = 0.006 S < 1/2 DIA. OK

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

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Sheet 51/81

Date: 9/27/12

Markups By: BMO4

GENERAL COMPUTATION SHEET

HVAC DUCTS AND SUPPORTS, AUXILIARY BLDG.

59553-2, 3, 4, 30, 3711, 33N

ISCT 12/6/82 VISL

A.M.2. a) AXIAL STRESS

$$f_a = \frac{0.236}{.836} = 0.282 \text{ ksi}$$

A.M.2. b) AXIAL BUCKLING

$$I_y = 2 \left(\frac{(2.09)(2.36^3)}{12} \right) + 2 (27.099)(12)^2 = 682 \text{ in}^4$$

$$A = 2 (2.4148)(10.277) = 4.91 \text{ in}^2$$

$$R = \sqrt{\frac{I_y}{A}} = 10.58 \text{ in}$$

$$\frac{KL}{R} = \frac{2.0(78.5+70+142)}{10.58} = 30.53$$

$$C_c = \sqrt{\frac{201,000}{F_y}} = 138$$

$$G = \frac{A_{eff}}{A} = \frac{0.836}{4.31} = .19$$

$$\frac{C_c}{KL} = \frac{138}{30.53} = 4.52 > \frac{KL}{R} = 30.53$$

$$F_{a1} = \left[0.522 (.19)(30) - \frac{[0.19(30)(30.53)]^2}{1494} \right]^{1/2} = 4.75 \text{ ksi} > 1.5 \text{ ksi OK}$$

$$F_{a2} = 4.75 \text{ ksi} > 1.5 \text{ ksi}(1.27) = 1.91 \text{ ksi ok}$$

A.M.2.0 APPLY PRESSURE LOADS TO DUCTS

A.M.2.1 $f_{air} = \frac{P_{air}}{P_{oc}}$

$$P_{oc} = \frac{E}{2.52} \sqrt{\frac{I_y}{E}} \left(\frac{1}{2} + \frac{1}{j} \right)$$

$$= \frac{30000(10277)}{2.52} \sqrt{\frac{30000}{27+12}} \left(\frac{1}{2} + \frac{1}{30} \right)$$

$$= 0.62 \text{ psi} \quad (.0062 \text{ ksi})$$

$$P_{air} = P_{a1} + P_o + P_{c1}$$

$$= .092 + .2076 + .0095(3.10)$$

$$= 0.1810$$

* ACTUALLY, $f_{a1} = \frac{P_{air}}{P_{oc}}$ SINCE IT IS OK USING HERE, THIS IS ACCEPTABLE

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

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Sheet 52/81

Date: 9/27/12

Markups By: BMO4

PACIFIC GAS AND ELECTRIC COMPANY
 SHEET NO. 52 OF 81
 HV-86
 REV. 0
 GENERAL COMPUTATION SHEET

HVAC DUCTS AND SUPPORTS, AUXILIARY BLDG.

59853-2, 3, 4, 30, 32N, 33N

ISCT 12/6/82 VSL

$$f_{\text{PMT}} = \frac{.1310(30000)}{.62} = 6336 \text{ psi} = 6.336 \text{ ksi}$$

A 13.0 CHECK DUCT SHEET STRESSES

$$f_{\text{PM}} + f_{\text{V}} + f_{\text{H}} \leq 0.96 F_y$$

$$6.336 + 5.171 + 0.282 = 11.789 \text{ ksi} < 0.96 (30) = 28.80 \text{ ksi}$$

∴ OK

Duct Sheet Stress

11.789 ksi (1.27) = 15.0 ksi < 0.96 (30 ksi) or 28.80 ksi ok

A 13.2 SHEAR STRESSES

$$\left. \begin{array}{l} f_v = 0.250 \\ f_h = 0.433 \end{array} \right\} \Sigma = 0.783 \text{ ksi} < 0.58 F_y = 17.4 \text{ ksi}$$

∴ OK

Shear Stress

0.783 (1.27) = 0.99 ksi < 0.58 F_y = 17.4 ksi ok

A 14.0 APPLY PRESSURE LOADS TO DUCT STIFFENERS AND CHECK STRESSES

A 14.1 CIRCULAR STRESS IN DUCT STIFFENERS

$$A 14.1.1.1 \quad f_{\text{PMT}} = \frac{M_{\text{MAX}}}{S_x} \leq 0.96 F_y$$

STIFFENER: $2 \times 1/2 \times 1/2 \times 1/8$

$$A_x = .589 \text{ in}^2$$

$$I_x = .078 \text{ in}^4$$

$$y_x = .421$$

$$j = 30^\circ$$

$a = 48" \quad \Delta J = 30"$

$$M_{\text{MAX}} = \frac{(5-j^2/a^2) P_{\text{INT}} j a^2}{24}$$

$$= \frac{(5 - 50^2/48^2) (.1310) (30)(48)^2}{24}$$

$$= 984.5 \text{ in-in} = .985 \text{ in-k}$$

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 15 of 18

Sheet 55/81

Date: 9/27/12

Markups By: BMO4

PACIFIC GAS AND ELECTRIC COMPANY
GENERAL COMPUTATION SHEET

HVAC DUCTS AND SUPPORTS, AUXILIARY BLDG
59353-2, 3, 4, 50, 52A, 52B
REV 12/6/82 VBL

A 11.2.2 AXIAL STRESSES

$$f_a = \frac{0.3976}{.525} = 0.484 \text{ ksi}$$

Axial Buckling

A 11.2.6 AXIAL BUCKLING

$$I_y = 2 \left[\frac{.0299 \times 10^8}{12} \right] + 2 (29 \times .0299) \left(\frac{16}{2} \right)^2 = 112.3$$

$$A_g = 2 (24 + 14) (.0299) = 2.392$$

$$R = \sqrt{\frac{I_y}{A_g}} = 6.85$$

$$C_e = \sqrt{\frac{0.75 E}{F_y}} = 138 \quad Q = \frac{.825}{2.392} = 0.345$$

$$\frac{C_e}{R} = \frac{138}{6.85} = 235 > \frac{KL}{R} = \frac{2.0 (2.25 + 26.75)}{6.85} = 10.5$$

$$F_{a1} = \left[50.22 (.245) (20) - \left[\frac{.345 (20) (10.5)}{1092} \right]^2 \right]^{.5} \left(1.6 = 8.64 \text{ ksi} \right)$$

* > .484 : OK

8.64 ksi > 0.484 ksi (1.27) = 0.615 ksi ok

A 12.0 APPLY PREVIOUS LOAD TO DUCT

A 12.1 $f_{PMT} = \frac{P_{MT} F_y}{P_{TC}}$

$$P_{TC} = \frac{30 (0.0299) \left(\frac{30000}{29 \times 10^6} \left(\frac{1}{24} + \frac{1}{14} \right) \right)}{2.152}$$

$$= 0.716 \text{ psi}$$

$$P_{MT} = .042 + .0095 + .0095 (3.1)$$

$$= 0.1310$$

$$f_{PMT} = \frac{.1310 (30000)}{.716} = 5489 \text{ psi}$$

$$= 5.49 \text{ ksi}$$

* ACTUALLY, $f_a = \frac{P_{axial}}{A_g}$ BUT SINCE IT IS OK USING EFFECTIVE AREA THE AXIAL STRESS, IT IS ACCEPTABLE.

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 16 of 18

Sheet 56/81

Date: 9/27/12

Markups By: BMO4

GENERAL COMPUTATION SHEET

HMAC DUCTS AND SUPPORTS, AUXILIARY BLDG.
 59253-2, 3, 4, 33, 35N, 35N1
 DCT 12/6/82 VBL

A 13.0 CHECK DUCT SHEET STRESSES

$f_{PM} + f_{V} + f_{E} \leq 0.96 F_y$

$5.49 + 1.982 + .684 = 7.956 \text{ ksi} < 0.96 F_y = 28.80 \text{ ksi}$
 $\therefore \text{OK}$

Duct Sheet Stresses

$7.956 \text{ ksi (1.27)} > 10.10 \text{ ksi} < 0.96 F_y \text{ or } 28.8 \text{ ksi ok}$

A 13.2 SHEAR STRESSES

$f_v = 0.241 F_y < 0.58 F_y = 17.4 \text{ ksi} \therefore \text{OK}$

$f_v = 0.294 \text{ ksi} < 17.4 \therefore \text{OK}$

Shear Stresses

$= 0.24(1.27) = 0.306 \text{ ksi} < 17.4 \text{ ksi ok}$

$= 0.294(1.27) = 0.373 \text{ ksi} < 17.4 \text{ ksi ok}$

A 14.0 APPLY PRESSURE LOADS TO DUCT STIFFENERS

SEE SH. 52, 53 FOR COMPARISON, THIS IS MORE CRITICAL THAN STIFFENERS FOR 24" x 16" DUCT. $\therefore \text{OK}$.

CHECK 36" x 20" DUCT. (SPANS 15, 16, SEE CH. 2)

VERTICAL (SH. 12)

SHEAR $V = 0.121 \times 3.10 = .375 \text{ K}$

$M_y = 1.319 \times 3.10 = 4.09 \text{ K-F}$

EAST-WEST (SH. 12)

AXIAL $= 1.0882 \times 3.10 = 0.274 \text{ K}$

SHEAR $V = 1.174 \times 3.10 = .364 \text{ K}$

$M_z = 4.226 \times 3.10 = 13.11 \text{ K-F}$

NORTH-SOUTH

AXIAL $= 1.00216 (2.20) = .005 \text{ K}$

SHEAR $V = .085 (2.20) = .187 \text{ K}$

$M_z = .784 (2.20) = 1.725 \text{ K-F}$

BY COMPARISON, SV + EW IS MORE CRITICAL.

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 17 of 18

Sheet 58/81

Date: 9/27/12

Markups By: BMO4

SR 81
HV-88
REMO

REC'D: ELECTRICAL ENGINEERING
GENERAL COMPUTATION SHEET

HVAC DUCTS AND SUPPORTS, AUXILIARY BLOC

59353-2-3-4, 30, 30N, 30W

ACT 12/1/12 VBL

1180: CHECK DUCT SHEET STRESSES

few - few + few = 0.9% @

6.504 + 1835 + 345 = 8,977 KSI < 18% (19)

OK

1.5.2 SHEAR STRESSES

(NEGLECT)

1.5.3 REF. TO SP 52, 53 FOR AMPLIFICATION

OF DUCT STIFFENERS.

CONCLUSION:

THE HVAC DUCT AND DUCT SUPPORTS ARE FOUND TO BE ACCEPTABLE WITH THE FOLLOWING MODIFICATIONS TO BE MADE IN THE FIELD.

1. SUPPORT # 59353-23: WELD DIAGONAL BRACES (2x 1/2 x 4/8 x 1/4) TO THE VERTICAL MEMBERS (LATER) AS SHOWN ON P. 60 OF THIS CALC.
2. ADD NEW SUPPORTS # 59353-22N AND 30W AS SHOWN ON PP. 61-65 OF THIS CALC.

Conclusion:

After accounting for existing stiffener weight on HVAC spans 5 and 6, the ducting and associated duct supports are OK.

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-D-VAC-2-MOD-10

Attachment 1

Page 18 of 18

A 11.0 Apply Seismic and Dead Loads to Duct
Check 70" x 20" Rectangular Duct (Spans 5 and 6)

Vertical Load
Shear $z = 0.178^k(1.27)(3.10) = 0.7^k$
Torsional = 0
 $M_x = 2.15^{in-k}(1.27)(3.10) = 8.46^{in-k}$

East West Load
Axial $P = 0.178^k(1.27)(3.10) = 0.7^k$
Shear $Y = 0$
 $M_x = 0$

North South Load
Axial $P = 0$
Shear $Y = 0.178^k(1.27)(2.20) = 0.5^k$
 $M_x = 2.15^{in-k}(1.27)(2.20) = 6.0^{in-k}$

By comparison, the more critical combination load will be (EV + NS)

A 11.1.a. Bending Stresses (See Sheet 7 of HV-86)

$S_z = 1015.044/10 = 101.5 \text{ in}^3$
 $S_y = 89.897/35 = 2.57 \text{ in}^3$
 $f_b = 8.46/101.5 + 6.0/2.57 = 2.42 \text{ ksi}$

A 11.1.b. Shear Stress
 $A_{w1} = 2(70)0.0359 = 5.03 \text{ in}^2$
 $A_{w2} = 2(20)0.0359 = 1.44 \text{ in}^2$

$f_{vy} = 0.7^k/1.44 + 0 = 0.49 \text{ ksi}$
 $f_{tz} = 0.5^k/5.03 + 0 = 0.099 \text{ ksi}$

A 11.2.a Axial Stresses

$f_a = P/A_1 = 0.7/0.926 = 0.756 \text{ ksi}$

A 11.2.b Axial Buckling (See Sheet 9 of HV-4)

$f_{ca} = P_i/A_o$ where $A_o = 2(ht+wt)$
 $= 2(70 + 20)0.0359$
 $= 6.46 \text{ in}^2$
 $f_{ca} = 0.7/6.46 = 0.11 \text{ ksi} < 1.6F_a \text{ ok}$

A 12.0 Apply Pressure Loads to Ducts

$P_{FC} = \frac{30000(0.0359)}{2.52} \sqrt{\frac{30000}{29000000} (\frac{1}{10} + \frac{1}{10})} = 0.796 \text{ ksi}$
 $P_{MT} = P_M + P_D + P_E = 0.092 + 0.0114 + 0.0359 = 0.1387 \text{ psi}$

$f_{pm} = P_{MT}F_y/P_{FC} = 0.1387(30,000)/0.796 = 5.41 \text{ ksi}$

A 13.0 Check Duct Stresses

$5.41 + 0.756 + 2.42 = 8.59 \text{ ksi} < 28.80 \text{ ksi}$

A 13.2 Shear Stresses

$f_v = 0.49 + 0.099 = 5.89 \text{ ksi ok (i.e., } < 17.4 \text{ ksi)}$

A 14.0 Apply Pressure Loads (See AISC 7th for angle and channel properties)

L1x1x1/8" and MC 8x18.7

$f_{MT} = M_{max}/S_x < 0.96 F_y$
Stiffener type: MC8x18.7 atop two angles. (above and below ducting).

$M_{max} = \frac{(3-j^2/a^2)P_{MT}(j)a^2}{j} = \frac{(3-24^2/170^2)0.1387(24)70^2}{24} = 1959 \text{ lb-in}$

$S_x = I_x(h_s + t - \bar{y})$
where $h_s = \text{height of composite stiffener} = 1" + 2.9" = 3.9"$
 $t = 0.0359"$

$I_x = 5.0 + 12(0.0359)(1.86 - 0.0359/2)^2 + 5.97(2.0 + 0.0359 - 1.86)^2 = 6.64$

I_x is about 5.0 in⁴ by engineering judgement
 $b_x = 12$ or $1/2j$
 $y_t = 2.0$ in by engineering judgment
 $\bar{y} = \frac{12^3(0.0359)^3/2 + 5.96(2.0 + 0.0359)}{5.96 + 12(0.0359)} = 1.86$

$S_x = 6.64(3.9 + 0.0359 - 1.86) = 13.79$

bending stress on stiffener
 $f_{MT} = M_{max}/S_x = 1959/13.79 = 0.142 \text{ ksi} < 0.96 F_y = 28.8 \text{ ksi ok}$

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-P-D-VAC-2-MOD-9

Equipment Class: 8

Equipment Description: Control Room Ventilation Supply Fan Suction Dampers

Location: Building: Auxiliary

Floor El. 154

Room, Area: 2-CR-37

Manufacturer, model, Etc. Barber Colman Electric Actuator

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
Actuator support frame and actuator anchorage is consistent with drawing 515850-1.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
Overhead items consist of conduit and a copper pipe that are well supported.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Nearby room lighting fixture is restrained by (2) rods with ball and socket connections to the ceiling.
9. Do attached lines have adequate flexibility to avoid damage? Y
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-P-D-VAC-2-MOD-9

Equipment Class: 8

Equipment Description: Control Room Ventilation Supply Fan Suction Dampers

Comment:

Damper system consists of an in-line rectangular damper plus a separately supported actuator. The ducting has an insulating cover and the connection duct/damper connection could not be seen. However, the damper appears to be well restrained in the duct. The ducting below the damper is secured to the floor while the ducting above the damper is supported from the ceiling. The separately mounted damper actuator is bolted by (3) 3/16" bolts threaded into a plate that is welded to a Unistrut frame that is bolted to the ceiling. The Unistrut frame is braced in both horizontal directions. The actuator and damper mechanisms are connected by an approximately 5/16" diameter rod that is about 4' in length. It appears that the flexibility of the rod is sufficient to accommodate the relative horizontal displacement of the floor at 154' and the ceiling at 163' which based on Hosgri DCM C-28, is less than 0.02"

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

DRC

D.R. Linn

10/18/2012

Seismic Walkdown Checklist (SWC)

Status: N

Equipment ID No DC-2-23-P-FL-FU41

Equipment Class: 18

Equipment Description: Control Room Ventilation Filter Unit

Location: Building: Auxiliary

Floor El. 154

Room, Area: 2-CR-37

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

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

2. Is the anchorage free of bent, broken, missing or loose hardware? Y
Filter unit is anchored by (4) 1/2" embedded anchors on either side (8 total).
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y

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

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N
Drawing 443333-1 indicates that the anchor bolts should be 5/8" in diameter. Calculation D-HVAC-5.11-1 calculates anchor bolt stress based on 1/2" anchor bolts. Because of the location of the weld between the channel flange and the I-beam flange the load path for vertical loads and side-to-side overturning forces is not directly through the axes of the members creating rotational moments. However, the referenced calculation applies the loads properly. For disposition see Attachment 1.
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
Only soft targets are short runs of small diameter copper tubing located on one side of the filter unit. A nearby room lighting fixture appears to be the only credible falling source but it is supported by pipe section with ball and socket connection.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Overhead conduit, fire water piping, and junction boxes are well supported. Reinforced masonry wall has additional support both at the base and the top.
9. Do attached lines have adequate flexibility to avoid damage? Y

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Temporary scaffold adjacent to the filter is properly restrained and the paperwork is current.

Seismic Walkdown Checklist (SWC)

Status: N

Equipment ID No DC-2-23-P-FL-FU41

Equipment Class: 18

Equipment Description: Control Room Ventilation Filter Unit

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/25/2012

DRC

J.P. Ln

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-23-P-FL-FU41

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Anchorage Drawing 443333-1, for the anchorage of Filter Unit FU41, incorrectly shows the embedded anchors for the filter unit to be 5/8" diameter. The as-found anchors are 1/2" diameter.

Evaluation:

Filter Unit FU41 is Design Class I. Its function is to filter the supply air for the Unit 2 Control Room. It is located @ elevation 154' in Area H of the Auxiliary Building. The qualification of the filter unit is found under Seismic Calculation File No. D-HVAC-5.11-1. The seismic calculation assumes the anchors to be 1/2" diameter (as-found condition = analyzed condition).

Therefore, this condition does not impact the operation of DCPD.

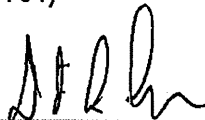
Recommendation:

Drawing 443333-1 needs revision to reflect the as-found size of the embedded anchors.

Notification Required: Yes (50519791)

Evaluated by:

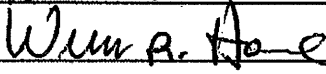
DRC



10/22/2012

Reviewed by:

WAM



10/22/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-P-VOS-VAC-2-FCV-700

Equipment Class: 8

Equipment Description: Post-LOCA Sample System return line to containment valves

Location: Building: Auxiliary

Floor El. 100

Room, Area: 2-FCV700

Manufacturer, model, Etc. Valcor Engineering Corp.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
Small instrument valve with tubing on both sides of the valve (U-bolts) and the operator (bolted strap) secured to the same mounting bracket. The mounting bracket is anchored to the concrete wall by (4) 1/2" expansion anchors. Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
Overhead piping (CCW and fire water), conduit, junction boxes, and cable trays are well supported.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
No masonry block walls in area.
9. Do attached lines have adequate flexibility to avoid damage? Y
Electrical line to valve has adequate flexibility.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-23-P-VOS-VAC-2-FCV-700

Equipment Class: 8

Equipment Description: Post-LOCA Sample System return line to containment valves

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

DRC

J.R. [Signature]

10/18/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-25-M-TK-BUAS-602

Equipment Class: 21

Equipment Description: ASW Flow Control Valve No. FCV-602 Backup Air Accumulator

Location: Building: Turbine

Floor El. 85

Room, Area: 2-CCWHE

Manufacturer, model, Etc.

Instructions for Completing Checklist

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

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
The anchorage consists of weldments that are substantial and adequately support the air tanks.
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
The accumulators are located in a niche in the concrete wall that protects them from falling objects. Thus the only soft targets for the accumulator tanks is the stainless steel transfer tubing that runs along the wall.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Possible falling sources include the room lighting fixtures, the emergency lighting, and the nearby masonry block wall. The lighting fixtures are adequately restrained and the reinforced masonry wall includes additional support at the base and near the top. The nearby room lighting fixture will likely swing during an earthquake and the support rods will likely impact the SCW piping that is in close proximity. It is judged that such impact could jar the fluorescent tubes loose from the fixture, but these pose no hazard to the tubing. Such impact should not result in falling of the fixture itself.
9. Do attached lines have adequate flexibility to avoid damage? Y
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-25-M-TK-BUAS-602

Equipment Class: 21

Equipment Description: ASW Flow Control Valve No. FCV-602 Backup Air Accumulator

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/14/2012

KA

A. @ Brenton

10/22/12.

Seismic Walkdown Checklist (SWC)

Status: N DEC
* 11/19/12
JRL 11/20/12

Equipment ID No DC-2-36-E-PNL-RNARA

Equipment Class: 20

Equipment Description: Auxiliary Relay Rack

Location: Building: Auxiliary

Floor El. 128

Room, Area: 2-RNARA

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

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

2. Is the anchorage free of bent, broken, missing or loose hardware? Y
A false floor is created by a series of W10 wide flange beams that are bolted to the concrete slab by 5/8" expansion anchors spaced on 24" centers alternating on either side of the beam. The panel is welded to the flange of beams running along the front and back of the panel. The original welds are 1" to 1-1/2" long 3/16" fillet welds spaced on 6" centers. However, due to a gap resulting from leveling, the effective weld is substantially less being on the order of 1/16" in some cases. These welds appear marginal since they are shorter and effectively smaller welds than for the Unit 1 panel and this panel does not have the added welded tabs that are present on the Unit 1 panel. For disposition see Attachment 1. Y

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

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

5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
The welds appear to be shorter and smaller than that specified as the original welds on drawing 050053-64.

6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y
The end weld is missing on one side of the panel such that there are (5) welds one one side and only (4) welds on the other. For disposition see Attachment 1. N DEC
JRL 11/19/12
11/20/12

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
Panel RNAR-A is the end panel of three similar adjacent panels. The panels are connected at the top by plates that span between adjacent panels and are bolted to the top structural members for each. These connecting plates are located both front and back.

8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Several layers of conduit run above the panels that appear to be rigidly supported. Conduit runs also enter the top of the panel. Cable trays run above the front and back of the panel and these are also rigidly restrained.

9. Do attached lines have adequate flexibility to avoid damage? Y
Connections are via rigid conduit.

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: N DK
X 11/11/12
TRK
11/20/12

Equipment ID No DC-2-36-E-PNL-RNARA

Equipment Class: 20

Equipment Description: Auxiliary Relay Rack

Comment:

Evaluated by:

TRK

Thomas R. Kipp

Date:

10/25/2012

DRC

D.P. In

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-36-E-PNL-RNARA

Attachment 1, Page 1 of 5

Licensing Basis Evaluation

Issue:

The base welds between the bottom of Unit 2 RNARA and RNARB panels and floor beams are found smaller than the evaluation in the civil calculation.

Evaluation:

Units 1 and 2 RNARA and RNARB are bolted together with panels RNASA, RNASB and RAR and located in cable spreading room (Aux Building 128'). The evaluation of panel interaction is documented in seismic legacy calculation ES-62.

The as-built of base weld evaluations are shown in the following Civil EPA calculations;

Unit 1 RNARA & RNARB is documented in EPA-4.

Unit 2 RNARA & RNARB is documented in EPA-19.

Units 1 and 2 RNASA, RNASB and RAR is documented in EPA-31.

Evaluation:

RNARA and RNARB are non-safety related equipment, and qualified for the structural integrity in seismic legacy calc # ES-082.

During Fukushima 2.3 seismic walk down, among of all line-up panels in Unit 1 and 2, it is found that Unit 2 RNARA and RNARB panel base weld size is approximately 1/8", the weld lengths are various from 1" to 1-1/2" long, which are smaller than that was analyzed. According to the original field walk down of Unit 2 RNARA and RNARB, each panel has five (5) welds in the front and back. They are 3/16" fillet weld, 1-1/2" long and 7" center to center. The seismic evaluation of the base welds is documented in civil calculation EPA-19.

The as-found condition is evaluated and shown in pages 2 through 5. The result shows that the as-found condition is adequate. The as-found condition has no adverse effects on the seismic qualification of Unit 2 RNARA and RNARB.

This condition does not impact the operation of DCP.

Notification Required: Yes (50512682)

Evaluated by: Patrick Zhang 10/23/12
Reviewed by: [Signature] 10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-36-E-PNL-RNARA

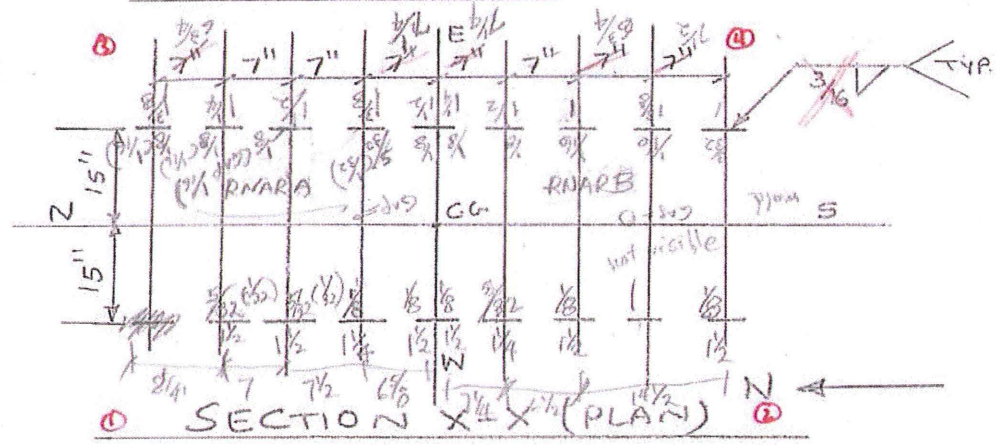
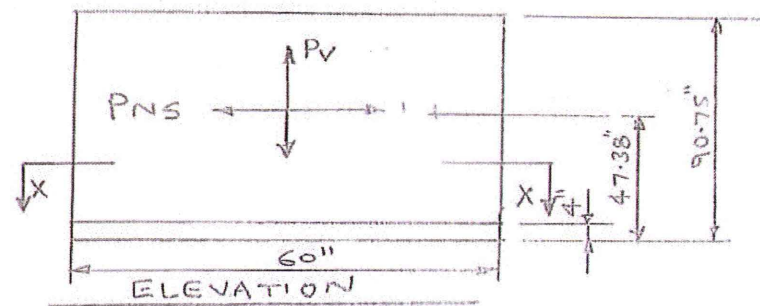
Attachment 1, Page 2 of 5

ASSUME BOTH CABINETS AS ONE UNIT FOR ANALYSIS.
 WEIGHT OF ONE CABINET = 1200 LBS (AS-BUILT 1340 SEE SAT. 10 FOR REV.)
 TOTAL WEIGHT OF SYSTEM = 2 x 1.2 K x 1.1 = 2.64 K
 $\therefore PV = 2.2 \times 2.95 = 5.81 K$

$PNS = 4.68 \times 2.95 = 12.36 K$

$PEW = 2.15 \times 2.95 = 5.63 K$

CHECK VERTICAL + HORIZONTAL NORTH-SOUTH LOADING



Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-36-E-PNL-RNARA

Attachment 1, Page 3 of 5

CHECK VERTICAL + HORIZONTAL (N-S) LOADING COND.

$$S_{WE-W} = \frac{4}{28} \left[\frac{1.5}{12}^3 + 1.5(20)^2 \right] + \frac{4}{21} \left[\frac{1.5}{12}^3 + 1.5(21)^2 \right] +$$

$$\frac{4}{14} \left[\frac{1.5}{12}^3 + 1.5(14)^2 \right] + \frac{4}{7} \left[\frac{1.5}{12}^3 + 1.5(7)^2 \right] + \frac{2(7.5)^3}{12 \times 0.75}$$

$$S_{WE-W} = 168 + 126 + 84 + 42 + 1 = 421 \text{ IN}^2$$

$$P_V = 6.49 \text{ K} \times 5.81 \text{ P.N.S} = 12.36 \text{ K}$$

$$M_{E-W} = 13.81 \text{ K} \times 47.38'' = 586 \text{ IN KIP}$$

$$f_1 = \frac{586 \text{ IN KIP}}{421 \text{ IN}^2} + \frac{5.81}{18 \times 1.5 \text{ IN}} = 1.39 + 0.22 = 1.61 \text{ K/IN}$$

$$f_2 = \frac{12.36 \text{ KIP}}{18 \times 1.5 \text{ IN}} = 0.46 \text{ K/IN}$$

$$\text{RESULTANT } f_R = \left[(1.61)^2 + (0.46)^2 \right]^{1/2} = 1.68 \text{ K/IN} \left(\begin{array}{l} \text{SEE SH. 10} \\ \text{FOR REV.} \end{array} \right) \Delta$$

ALLOWABLE FORCE ON $3'' \times \frac{1}{8}''$ WELD = f_R

$$\therefore f_R = 0.1875 \times 0.707 \times 21.6 \times 1.6$$

$$\therefore f_R = 4.58 \text{ KIP/IN} > 1.68 \text{ K/IN}$$

\(\therefore\) EXISTING WELDS CAN RESIST
VERTICAL + H-N-S LOADING

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-36-E-PNL-RNARA

Attachment 1, Page 4 of 5

CHECK VERTICAL + HORIZONTAL E-W LOADING

$PV = 5.81 \text{ K}$ $PE-W = 5.68 \text{ K}$

$MN-S = 5.68 \text{ K} \times 47.38 = 270 \text{ IN KIP}$

$S_{N-S} = b \times d = (9 \times 1.5) 30 = 405 \text{ IN}^2$

$f_1 = \frac{270 \text{ IN KIP}}{405 \text{ IN}^2} + \frac{5.81 \text{ KIP}}{18 \times 1.5 \text{ IN}} = 0.67 + 0.22 = 0.89 \text{ K/IN}$

Due to MN-S Due to PV

$f_2 = \frac{5.68 \text{ KIP}}{18 \times 1.5 \text{ IN}} = 0.21 \text{ K/IN}$

RESULTANT $f_R = \left[(0.89)^2 + (0.21)^2 \right]^{1/2}$

" $f_R = 0.92 \text{ K/IN (SEE SH. 10 FOR REVISION)} \quad \Delta$

ALLOWABLE $FR = 0.1875 \times 0.707 \times 21.6 \times 1.6$

" $FR = 4.58 \text{ K/IN} > 0.92 \text{ K/IN}$

∴ EXISTING WELDS CAN RESIST VERTICAL + H.E.W LOADING

CONCLUSION: EXISTING WELDS ARE OK. NO MODIFICATION IS REQUIRED.

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-36-E-PNL-RNARA

Attachment 1, Page 5 of 5

EVALUATION FOR THE STRUCTURAL AND SEISMIC
ADEQUACY OF THE ANCHORAGE WELDS
DUE TO CABINET WEIGHT CHANGE.

THE CABINET WEIGHT SHALL BE
1340 BLS (SEE APPENDIX "B")

$$\text{THE WEIGHT INCREASED} = \frac{1340 - 1200}{1200} = 12\%$$

THEREFORE PROPORTIONALLY THE RESULT
WILL INCREASED 12%.

CHECK VERTICAL + HORIZONTAL (N-S) LOAD (SHT. 7)

$$\text{RESULTANT } F_R = \frac{2.18}{1.68} \text{ K/IN} \times 1.12 = \frac{2.44}{1.88} \text{ K/IN}$$

$$\text{ALLOWABLE FORCE ON } \frac{3}{16} \text{ WELD} = F_R = \frac{2.97}{4.58} \text{ K/IN}$$

$$\text{SAFETY FACTOR} = \frac{2.97}{1.88} = 2.44 \cdot 1.22$$

∴ THE CONCLUSION ON SHT. 9 STILL HOLDS

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-38-I-PNL-RNSIA

Equipment Class: 20

Equipment Description: SSPS - Input Relay Cabinet

Location: Building: Auxiliary

Floor El. 140

Room, Area: 2-SSPS

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
All visible anchorage is in good condition.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion is present.
4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A
Panels are all welded to embedded plates.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
Panels RNSIA, RNSLA, and RNSOA are part of a continuous cabinet. The bottom of the cabinet has (4) 1/2" x 2-1/2" x 4" A-36 galvanized steel plates welded to embeds on both sides. Previously, there were (5) 1/4" fillet welds with weld lengths of 2-1/2" on both sides of the cabinet. Some of the welds were removed in order to incorporate the plates that were welded to the embeds. Verification of the welds that were not removed could not be done due to the rubber skirting glued at the bottom of the cabinets. Further investigation into Calculation EPA-2 showed that the original fillet welds were neglected and only the welded embeds were used in the design calculation. Therefore, the original welds do not need to be verified since they are not part of the design basis. See drawings 050053 sheet 65 and CALC NO. EPA-2
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y
No adverse conditions were identified.

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No soft targets are present on the panel.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Overhead ceiling tiles may fall onto the cabinet if they are not seismically restrained but there are no soft targets, therefore no negative affect.
9. Do attached lines have adequate flexibility to avoid damage? Y
All attached lines use flexible conduit.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y
No seismic interaction issues were identified.

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-38-I-PNL-RNSIA

Equipment Class: 20

Equipment Description: SSPS - Input Relay Cabinet

Comment:

Evaluated by:

KTM

Keri Moore

Date:

10/15/2012

SMM

[Signature]

10/10/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-38-I-PNL-RNSLA

Equipment Class: 20

Equipment Description: SSPS - Logic Cabinet

Location: Building: Auxiliary

Floor El. 140

Room, Area: 2-SSPS

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. Is the Item one of the 50% of SWEL Items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
All visible anchorage is in good condition.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion is present.
4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A
Panels are all welded to embedded plates.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y
Panels RNSIA, RNSLA, and RNSOA are part of a continuous cabinet. The bottom of the cabinet has (4) 1/2" x 2-1/2" x 4" A-36 galvanized steel plates welded to embeds on both sides. Previously, there were (5) 1/4" fillet welds with weld lengths of 2-1/2" on both sides of the cabinet. Some of the welds were removed in order to incorporate the plates that were welded to the embeds. Verification of the welds that were not removed could not be done due to the rubber skirting glued at the bottom of the cabinets. Further investigation into Calculation EPA-2 showed that the original fillet welds were neglected and only the welded embeds were used in the design calculation. Therefore, the original welds do not need to be verified since they are not part of the design basis. See drawings 050053 sheet 65 and CALC NO. EPA-2. No issues were identified.

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
All nearby equipment are properly secured to prevent impact with the cabinet.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
External buttons are on the face of the cabinet. The suspended ceiling is hung with a braced unistrut system. The HVAC duct is braced and the registers are independently rod hung.
9. Do attached lines have adequate flexibility to avoid damage? Y
All attached lines use flexible conduit.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y
No seismic interaction issues were identified.

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-38-I-PNL-RNSLA

Equipment Class: 20

Equipment Description: SSPS - Logic Cabinet

Comment:

Evaluated by:

KTM

Keri Moon

Date:

10/15/2012

SMM

Scott M. M...

10/10/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-38-I-PNL-RNSOA

Equipment Class: 20

Equipment Description: SSPS - Output Relay Cabinet

Location: Building: Auxiliary

Floor El. 140

Room, Area: 2-SSPS

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e, is the item one of the 50% of SWEL Items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
All visible anchorage is in good condition.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion is present.
4. Is the anchorage free of visible cracks in the concrete near the anchors? N/A
Panels are all welded to embedded plates.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y
Panels RNSIA, RNSLA, and RNSOA are part of a continuous cabinet. The bottom of the cabinet has (4) 1/2" x 2-1/2" x 4" A-36 galvanized steel plates welded to embeds on both sides. Previously, there were (5) 1/4" fillet welds with weld lengths of 2-1/2" on both sides of the cabinet. Some of the welds were removed in order to incorporate the plates that were welded to the embeds. Verification of the welds that were not removed could not be done due to the rubber skirting glued at the bottom of the cabinets. Further investigation into Calculation EPA-2 showed that the original fillet welds were neglected and only the welded embeds were used in the design calculation. Therefore, the original welds do not need to be verified since they are not part of the design basis. See drawings 050053 sheet 65 and CALC NO. EPA-2. No issues were identified.

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No soft targets are present on the panel.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Overhead ceiling tiles may fall onto the cabinet if they are not seismically restrained but there are no soft targets, therefore no negative affect.
9. Do attached lines have adequate flexibility to avoid damage? Y
All attached lines use flexible conduit.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y
No seismic interaction issues were identified.

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-38-I-PNL-RNSOA

Equipment Class: 20

Equipment Description: SSPS - Output Relay Cabinet

Comment:

Evaluated by:

KTM

Date:

Kris Moore

10/15/2012

SMM

Scott M. Moore

10/18/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-38-I-PNL-RNSTA

Equipment Class: 20

Equipment Description: SSPS - Test Cabinet

Location: Building: Auxiliary

Floor El. 140

Room, Area: 2-SSPS

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware?
All visible anchorage is in good condition. Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation?
No corrosion is present. Y
4. Is the anchorage free of visible cracks in the concrete near the anchors?
Panels are all welded to embedded plates. N/A
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions?
No adverse conditions were identified. Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures?
No soft targets are present on the panel. Y
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment?
Overhead ceiling tiles may fall onto the cabinet if they are not seismically restrained but there are no soft targets, therefore no negative affect. Y
9. Do attached lines have adequate flexibility to avoid damage?
All attached lines use flexible conduit. Y
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects?
No seismic interaction issues were identified. Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-38-I-PNL-RNSTA

Equipment Class: 20

Equipment Description: SSPS - Test Cabinet

Comment:

Evaluated by:

KTM

Keri Mearns

Date:

10/15/2012

SMM

[Signature]

10/16/2012

Seismic Walkdown Checklist (SWC)

Equipment ID No. DC-2-42-M-EJ-FTC-2-EJ2 Equipment Class¹² 0. (Other)

Equipment Description: Fuel Transfer Tube Expansion Joint

Location: Bldg. Auxiliary Floor El. 100' Room, Area 2-EJ2

Manufacturer, Model, Etc. (optional but recommended) Tube-Turn Bellows Expansion Joint

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 the checklist for documenting other comments.

Anchorage

- | | | |
|----|---|-----|
| 1. | Is the anchorage configuration verification required (i.e., is the item one of the 50% of SWEL items requiring such verification)? | N |
| 2. | Is the anchorage free of bent, broken, missing or loose hardware?
This SWC applies to potential SFP rapid drain-down through the expansion joint where the Fuel Transfer Tube (FTT) penetrates the exterior wall of the Fuel Transfer Canal (FTC). The expansion joint is welded to the FTT at one end and the steel penetration sleeve that is cast into the concrete wall of the FTC at the other end. Therefore, anchorage is not applicable. | N/A |
| 3. | Is the anchorage free of corrosion that is more than mild surface corrosion? | N/A |
| 4. | Is the anchorage free of visible cracks in the concrete near the anchorage? | N/A |
| 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.) | N/A |
| 6. | Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? | N/A |

Interaction Effects

- | | | |
|----|---|---|
| 7. | Are soft targets free from impact by nearby equipment or structures?
The expansion joint is a soft target, but is located in a recess in the west wall of the Fuel Transfer Canal (see drawing no. 500973), which completely protects it from any falling objects. | Y |
| 8. | Are overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls not likely to collapse onto the equipment?
The expansion joint is located in a recess in the west wall of the Fuel Transfer Canal (see drawing no. 500973), which completely protects it from any falling objects. | Y |
| 9. | Do attached lines have adequate flexibility to avoid damage?
The function of the expansion joint is to accommodate any differential displacements between the Fuel Transfer Tube (which is anchored in to the Containment Structure) and the exterior wall of the Fuel Transfer Canal (which is part of the Auxiliary Building). There are no lines, other than the Fuel Transfer Tube, attached to the expansion joint. | Y |

¹² Enter the equipment class name from Appendix B: Classes of Equipment

Seismic Walkdown Checklist (SWC)

Equipment ID No. DC-2-42-M-EJ-FTC-2-EJ2 Equipment Class¹² 0. (Other)

Equipment Description: Fuel Transfer Tube Expansion Joint

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the plant equipment? Y

Minor corrosion was noted on the interior surface (dry side) of the expansion joint. See Attachment No. 1 for disposition.

Comments (Additional pages may be added as necessary)

This SWC applies to potential SFP rapid drain-down through the Fuel Transfer Tube (FTT) expansion joint (see drawing nos. 500197 and 663321-2 and the figure on sheet 3 of this SWC). Access to the interior surface (dry side) of the expansion joint is through a narrow annular space between the outside of the FTT (20" diameter pipe) and the inside of the 26" diameter penetration sleeve cast into the exterior concrete wall (27" thick) of the Fuel Transfer Canal (FTC). The exterior surface (wet side) of the expansion joint is located in a recess in the west wall of the FTC, which is near the bottom of the 40' deep FTC.

As indicated on drawing no. 663321-2, the expansion joint is fabricated from stainless steel. It is exposed to boric acid (SFP water) on the wet side and the outside atmosphere on the dry side (access to the dry side is through the seismic gap between the Auxiliary Building and the Containment Structure). Based on the potential environmental effects on the expansion joint, the dry side was selected for detailed visual examination, which was performed using a "boroscope" inserted into this annular space, which provided a display on a video monitor (screen shots from the video monitor shown on sheet 5).

Evaluated by: wrh William B. Horne Date: 10/23/12
snn Sally M. Hill 10/24/12

¹² Enter the equipment class name from Appendix B: Classes of Equipment

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-42-M-EJ-FTC-2-EJ2

Attachment 1, Page 1 of 1

Licensing Basis Evaluation

Issue:

Minor surface corrosion was noted on the interior surface (dry side) of the expansion joint.

Evaluation:

The Expansion Joint is Design Class I and seismically qualified. Its function is to provide a leak-tight seal around the Fuel Transfer Tube where it exits the west wall of the Fuel Transfer Canal while accommodating differential seismic and LOCA displacements between the Containment Exterior Concrete Structure and the Fuel Handling Area of the Auxiliary Building. The Expansion Joint is not a pressurized component, and is only subject to the water pressure associated with the hydraulic head associated with the water level in the Fuel Transfer Canal (approx. 40 ft.). Note that at this time, the Fuel Transfer Canal is flooded, so there is minor hydraulic head applied to the Expansion Joint.

The extent of the corrosion is minor, and will not compromise the structural integrity of the Expansion Joint.

Recommendation:

- Request further review/evaluation by the DCPM Metallurgist
- Consider developing a routine inspection program to monitor the condition of the Expansion Joint.

Notification Required: Yes (50518406)

Evaluated by: wrh William R. Howe 10/23/12

Reviewed by: SMSA Scott Miller 10/23/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-43-I-PNL-RNC11

Equipment Class: 18

Equipment Description: Process Control and Protection System - Computer Input Rack No. RNC11

Location: Building: Auxiliary

Floor El. 140

Room, Area: 2-VB1

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. Is the item one of the 50% of SWEL items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No bent, broken, or missing hardware observed. The panel is welded to embedded steel plates in the floor.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion observed.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No cracks observed in the concrete (inside panel).
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
The panel is bolted to the adjacent panels to prevent pounding
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Suspended ceiling is hung by a braced unistrut system. The lighting over the control consoles and vertical boards are independently hung. The HVAC duct is braced and the registers are independently rod hung. No masonry walls.
9. Do attached lines have adequate flexibility to avoid damage? Y
Raceway at the top of the panel is braced
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-43-I-PNL-RNC11

Equipment Class: 18

Equipment Description: Process Control and Protection System - Computer Input Rack No. RNC11

Comment:

The panel is welded to steel plates embedded in the concrete floor. No relays are mounted in the panel. All hardware is securely mounted.

Evaluated by:

DKN

David Maher 10/19/2012

Date:

SMM

Scott Miller 10/19/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-64-E-PNL-ARP

Equipment Class: 20

Equipment Description: Auxiliary Relay Panel

Location: Building: Auxiliary

Floor El.

Room, Area: 2-PNL-ARP

Manufacturer, model, Etc.

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e, is the item one of the 50% of SWEL Items requiring such verification)? N
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
All of the anchor bolts (both inside and outside of the panel) are in good condition.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion present.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No cracks are seen in the concrete.
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) N/A
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y
The inside of panel is anchored to the floor (see pictures). The back of the panel is anchored to the adjacent cabinet. The top of the panel is welded to a braced frame which acts as both a vertical and lateral restraint.

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
All overhead cable trays are seismically braced.
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Block walls have been retrofitted with steel members which are anchored at the top and bottom of the walls.
9. Do attached lines have adequate flexibility to avoid damage? Y
All attached lines have adequate flexibility.
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y
No interaction issues were found.

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-64-E-PNL-ARP

Equipment Class: 20

Equipment Description: Auxiliary Relay Panel

Comment:

Evaluated by:

KTM

Keri Mason

Date:

10/15/2012

SMM

Scott M. M...

10/18/2012

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-65-E-LC-PY21

Equipment Class: 2

Equipment Description: 120V AC Instrument Breaker Panels

Location: Building: Auxiliary

Floor El. 115

Room, Area: 2-BTC21

Manufacturer, model, Etc. Federal Pacific Electric

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. Is the item one of the 50% of SWEL items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
3. Is the anchorage free of corrosion that is more than mild surface oxidation?
No corrosion observed Y
4. Is the anchorage free of visible cracks in the concrete near the anchors?
No cracks observed Y
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
The anchorage is consistent with Drawing 050041 sheet 47
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures?
No soft targets. Y
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment?
Overhead conduit and duct are well supported. Y
9. Do attached lines have adequate flexibility to avoid damage?
Conduit and cable tray are supported close to the panel so no significant relative displacements are expected Y
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y
No credible interaction sources.

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-65-E-LC-PY21

Equipment Class: 2

Equipment Description: 120V AC Instrument Breaker Panels

Comment:

The internal components are securely mounted to the panel.

Evaluated by:

DKN

Daniel Holman

Date:

10/17/2012

DRC

D. R. ...

10/19/2012

DKN 11/20/12
DEC 11/19/12

Seismic Walkdown Checklist (SWC)

Status: ~~X~~ N

Equipment ID No DC-2-65-E-UPS-IY21

Equipment Class: 16

Equipment Description: 120V AC Inverters

Location: Building: Auxiliary

Floor El. 115

Room, Area: 2-BTC21

Manufacturer, model, Etc. Solidstate Controls Inc

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

- 1. Is the anchorage configuration verification required (i.e, is the item one of the 50% of SWEL items requiring such verification)? Y
- 2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No broken, bent, or missing hardware.
- 3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion observed.
- 4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No concrete cracks
- 5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the item is one of the 50% for which an anchorage configuration verification is required.) Y
The anchorage is consistent with drawing 050053 sheet 222
- 6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

- 7. Are soft targets free from impact by nearby equipment or structures? Y
Switches mounted on the front panel are protected by a plexiglass cover plate
- 8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Conduit and cable trays are well supported. Overhead HVAC duct is braced. Lighting is conduit hung with ball and socket connection and closed hooks to permit sway but maintain positive vertical load capacity
- 9. Do attached lines have adequate flexibility to avoid damage? Y
Conduits have flex connections at the top of the panel
- 10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y
Fire extinguisher is adequately restrained. Adjacent emergency light BOL-2-29R is seismically qualified so it is not an interaction source

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? ~~X~~
N

The mounting brackets for the transformers at the bottom left side of the panel have eight (8) locations (holes) for securing the transformers to the grating on the panel bottom. Only six (6) of the holes have bolts. Similarly, only five (5) of the eight holes are utilized (have bolts) for securing the transformer on the bottom right side of the panel. See Attachment 1 for disposition of this mounting configuration.

~~X~~
N
DKC
11/19/12
DKN
11/20/12

DKN 11/20/12
DEC 11/14/12
N
X

Seismic Walkdown Checklist (SWC)

Status: X

Equipment ID No DC-2-65-E-UPS-IY21

Equipment Class: 16

Equipment Description: 120V AC Inverters

Comment:

Evaluated by:

DKN

Daniel K. Baker

Date:

10/24/2012

DRC

D. P. Baker

10/23/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-65-E-UPS-IY21

Attachment 1, Page 1 of 4

Licensing Basis Evaluation

Issue:

The mounting brackets for this transformer have eight holes for mounting bolts. However, there were only six bolts installed in the bracket on the left and five bolts in the bracket on the right. (see sketch on Page 3).

Evaluation:

This transformer is Design Class I and seismically qualified. The seismic qualification of this component, as documented in Calc. No. ES-68-1, is based on shake table testing. A review of the test specimen (which is currently located in the DCPD Cold Machine Shop) indicates that the transformers are bolted on the bottom cabinet grating with six (6) 1/2" diameter Grade 2 bolts.

The as-found mounting condition is evaluated against the condition addressed in calculation no. ES-68-1 on page 4 of this Attachment. This evaluation indicates that a significant safety margin for the mounting bolts is available.

Therefore, as-found condition of IY21 has no adverse effect on the seismic qualification of this component, so this issue does not impact the safe operation of DCPD.

Recommendations:

- Perform an Extend of Condition review to determine if other similar transformers are impacted
- Revise calculation no. ES-68-1 to address the as-found condition

Notification Required: Yes (50518785)

Evaluated by: PWH

Patrick Huang 10/18/12

Reviewed by: WRH

William R. Howe 10/19/12

Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-65-E-UPS-IY21

Attachment 1, Page **3** of **4**

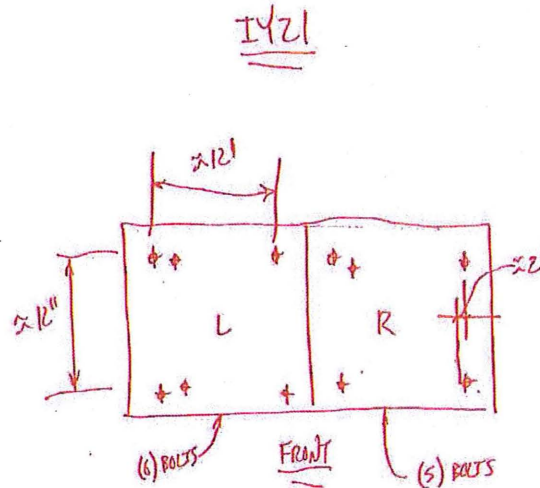
According to manufacturer, Ametek Solidstate Controls,

Weight of transformer:

80-314009-90 - 320 lbs

80-314007-90 - 630 lbs

Field Walk Down Sketch:



Seismic Walkdown Checklist (SWC)

Diablo Canyon Power Plant, Unit 2

Equipment No. DC-2-65-E-UPS-IY21

Attachment 1, Page 4 of 4

1.) Evaluation of IY-21 As-found Condition: Five (5) bolts are found at the bottom of right side cabinet.

The transformer is a solid, heavy, steel plated component. It can be treated as a rigid body. Therefore, the 1/2" \varnothing mounting bolts (a total of 7 bolts including 2 bolts on the top of transformer) are equally subjected to the direct shear and tension forces, and no overturning moments.

Seismic Accelerations: 5% damping floor peak RRS (see ES-68-1, Sheet 38)

Horizontal: 4 G's

Vertical: 2.4 G's

Equivalent Static Method: factor of 1.5 multiplies the floor peak accelerations to consider the multi-mode and multi-frequency.

The transformer on the right side is 80-314007-90 (See picture in Attachment 2). The transformer weighs about 630 lbs.

Shear due to the horizontal seismic load: $\left(\frac{630 * 4 * 1.5}{7}\right) * 2 = 1080 \text{ lbs / bolt}$

Tension due to the vertical upward seismic load: $\frac{630 * (2.4 - 1) * 1.5}{7} = 189 \text{ lbs}$

Allowable for Grade 2: Tensile strength is 60,000 psi, which is equivalent to A307 bolt.

From Calc. no. SQME-077, Sheet 13:

DE allowable for 1/2" \varnothing A307 bolt:

Tension: 4257 lbs

Shear: 1559 lbs

Interaction Ratio: $\left(\frac{189}{4257}\right)^2 + \left(\frac{1080}{1559}\right)^2 = .482 < 1.0 \text{ "OK"}$

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-65-E-XF-TRY21

Equipment Class: 4

Equipment Description: Nuclear Instrumentation Regulating Transformers

Location: Building: Auxiliary

Floor El: 100

Room, Area: 2-TRY21

Manufacturer, model, Etc. Solidstate Controls, Inc

Instructions for Completing Checklist

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Anchorage

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

Anchored to floor slab via (2) external angles running front to back. On either side (2) 3/4" bolts secure the angle to the transformer near the corners and (2) 3/4" expansion anchors secure the angle to the floor. Y

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

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

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

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

The anchorage is consistent with calculation ES-68-1 Attachment 6, Sheet 21 (Anchorage option C).

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

Interaction Effects

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

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

Reinforced masonry wall immediately behind the transformer is seismically qualified. Additional support for the wall has been provided at the base and at the top.

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

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

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-65-E-XF-TRY21

Equipment Class: 4

Equipment Description: Nuclear Instrumentation Regulating Transformers

Comment:

Evaluated by:

TRK

Date:

Thomas R. Kipp

10/14/2012

KA

A. Chaitanya 10/22/12

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-67-E-BT-BAT21

Equipment Class: 15

Equipment Description: 125V DC Batteries and Battery Racks

Location: Building: Auxiliary

Floor El. 115

Room, Area: 2-BAT21

Manufacturer, model, Etc. C&D LCUN 33

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 judgements and findings. Additional space is provided at the end of this checklist for documenting other comments.

Anchorage

1. Is the anchorage configuration verification required (i.e. Is the Item one of the 50% of SWEL Items requiring such verification)? Y
2. Is the anchorage free of bent, broken, missing or loose hardware? Y
No missing, bent or broken hardware.
3. Is the anchorage free of corrosion that is more than mild surface oxidation? Y
No corrosion observed.
4. Is the anchorage free of visible cracks in the concrete near the anchors? Y
No cracks observed
5. Is the anchorage configuration consistent with plant documentation? (Note: This question only applies if the Item is one of the 50% for which an anchorage configuration verification is required.) Y
Anchorage consistent with drawings 496150, 4004949, 496146, and 458684
6. Based on the above anchorage evaluations, is the anchorage free of potentially adverse seismic conditions? Y

Interaction Effects

7. Are soft targets free from impact by nearby equipment or structures? Y
No credible interaction sources
8. Are overhead equipment, distribution systems, ceiling tiles, and lighting, and masonry block walls not likely to collapse onto the equipment? Y
Conduit is well supported. Overhead lighting is hung by chains, but each light has a safety chain. The masonry walls have been strengthened for out of plane seismic loading.
9. Do attached lines have adequate flexibility to avoid damage? Y
Cables have adequate slack
10. Based on the above seismic interaction evaluations, is equipment free of potentially adverse seismic interaction effects? Y
PA speaker is anchored to the wall. Eyewash station is restrained to the adjacent masonry wall. The copper pipe feeding the eyewash station is supported.

Other Adverse Conditions

11. Have you looked for and found no other seismic conditions that could adversely affect the safety function of the equipment? Y

Seismic Walkdown Checklist (SWC)

Status: Y

Equipment ID No DC-2-67-E-BT-BAT21

Equipment Class: 15

Equipment Description: 125V DC Batteries and Battery Racks

Comment:

Racks 21A, 21B, and 21C are single tier racks. Rack 21D is a two tier rack. The end bolts of racks 21A and 21B are in contact. However, the plywood spacers between the racks and the rack longitudinal bracing will prevent significant pounding. No concerns.

Evaluated by:

DKN

Dambakken

Date:

10/17/2012

DRC

Adrian

10/19/2012