

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2013.5, 1304

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

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

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

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

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

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

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

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and Yes

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2013.5, 1304
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by: A. Karavoussianis Apostolos Karavoussianis Date: 11/16/2012

Curtis Stundbeck Curtis Stundbeck 11/19/2012

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2013.5, 1305

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

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

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

3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? Yes
Unsupported J-Box between 3' conduit runs. Ok per C-2605.

4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? Yes
There is a 1/4" gap between tank TKA-04 and pipe support. Pipe support and tank are not expected to close the gap therefore judged not to be a seismic concern.

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

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

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

Status: Y N U

Area Walk-By Checklist (AWC)

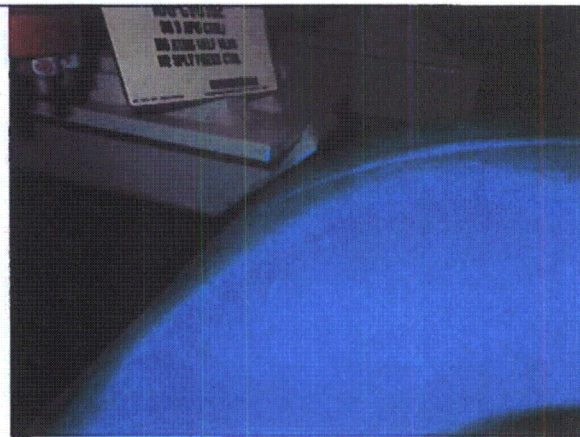
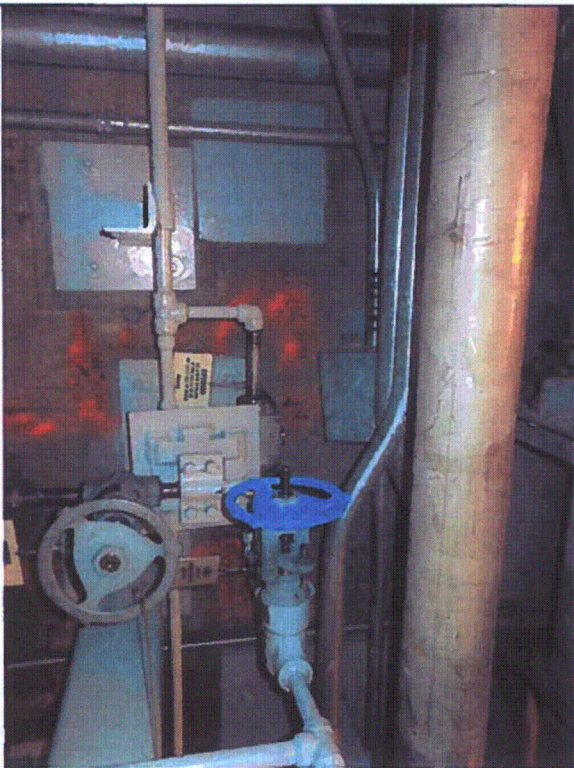
Location (Bldg, Elev, Room/Area): Area : AUX, 2013.5, 1305
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by: *A. Karavoussianis* Apostolos Karavoussianis Date: 11/16/2012

Curtis Stundbeck Curtis Stundbeck 11/19/2012

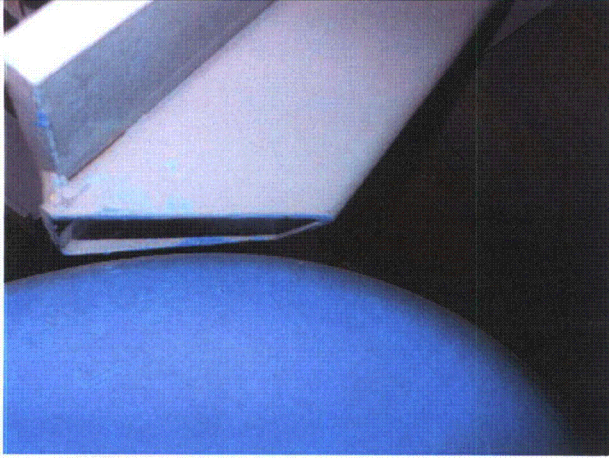


Area # AUX, 2013

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2013.5, 1305



Area # AUX, 2013



Area # AUX, 2013



Area # AUX, 2013

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2000, 3301

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

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

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

3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? Yes
*Cable trays are supported on unistrut frame hangers and braced.
Duct work supported by angle iron. Judged adequate.*

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

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

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

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and Yes

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2000, 3301
temporary installations (e.g., scaffolding, lead shielding)?

8. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? Yes
Block Wall south side of room, DWG A-2325 shows seismic category III/ CMUs within the whole elevation.

Comments

Evaluated by:

A. Karavoussianis

Apostolos Karavoussianis

Date: 11/16/2012

Curtis Stundebek

Curtis Stundebek

11/19/2012



Area # CB, 2000, 33010419



Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3407

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

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

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

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

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

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

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

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and Yes

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3407
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by: *A. Karavoussianis* Apostolos Karavoussianis Date: 11/16/2012

Curtis J. Stundebeck Curtis Stundebeck 11/19/2012



Area # CB, 2016, 34070459

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3409

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

- | | |
|--|-----|
| 1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)?
<i>Washers were used to level equipment in some area multiple washers, up to approximately 1-1/4" mat.</i> | Yes |
| 2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
| 7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and | Yes |

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3409
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by: A. Karavoussianis Apostolos Karavoussianis Date: 11/16/2012

Curtis Stundebeck Curtis Stundebeck 11/19/2012

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3413

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

- | | |
|--|-----|
| 1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
| 7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and | Yes |

Status: Y N U

Area Walk-By Checklist (AWC)

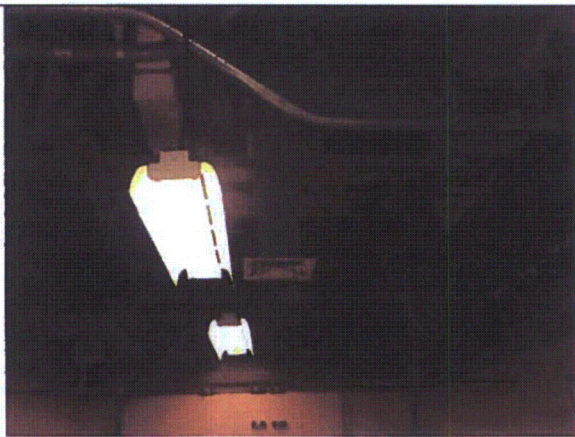
Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3413
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by: *A. Karavoussianis* Apostolos Karavoussianis Date: 11/16/2012

Curtis Stundbeck Curtis Stundbeck 11/19/2012



Area # CB, 2016, 34130469

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3414

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

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

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

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

4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? Yes
There is a 1/2" gap between NK03 and NK73. Potential contact point is approximately 61" high. Cabinet NK03 is considered rigid in its strong axis direction. Cabinet NK73 will oscillate in its weak axis direction. Since the depth is just 17", it is conservatively assumed to have a low frequency range with the peak response acceleration at Elev. 2016'. Callaway East SSE Response Spectra is used with 8Hz frequency and a 1.6g is extracted. Using a SF of 1.6, Damping of 3%, the response maximum displacement will be 0.39"<0.5"... No adverse condition exists.

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

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

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3414

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

Comments

Evaluated by:

A. Karavoussianis

Apostolos Karavoussianis

Date: 11/16/2012

Curtis Stundbeck

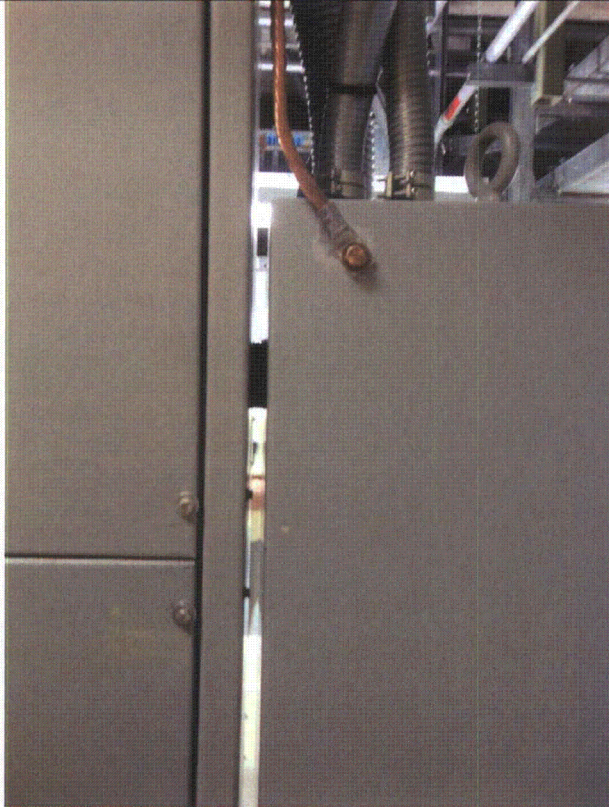
Curtis Stundbeck

11/19/2012

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3414



Area # CB, 2016, 34140482



Area # CB, 2016, 34140483



Area # CB, 2016, 34140484

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3416

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

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

2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? Yes
Observed surface oxidation. Judged Not a concern.

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

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

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

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

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and Yes

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3416
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by: *A. Karavoussianis* Apostolos Karavoussianis Date: 11/16/2012

Curtis Stundebeck Curtis Stundebeck 11/19/2012



Area # CB, 2016, 34160491

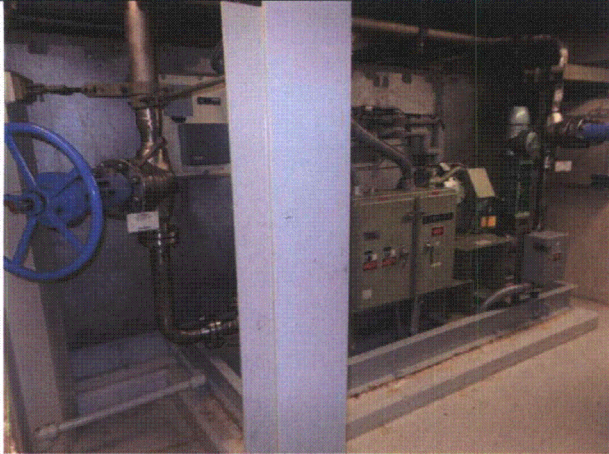


Area # CB, 2016, 34160492

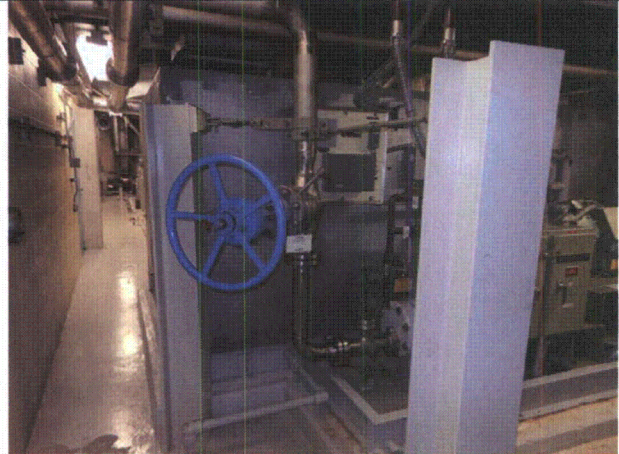
Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3416



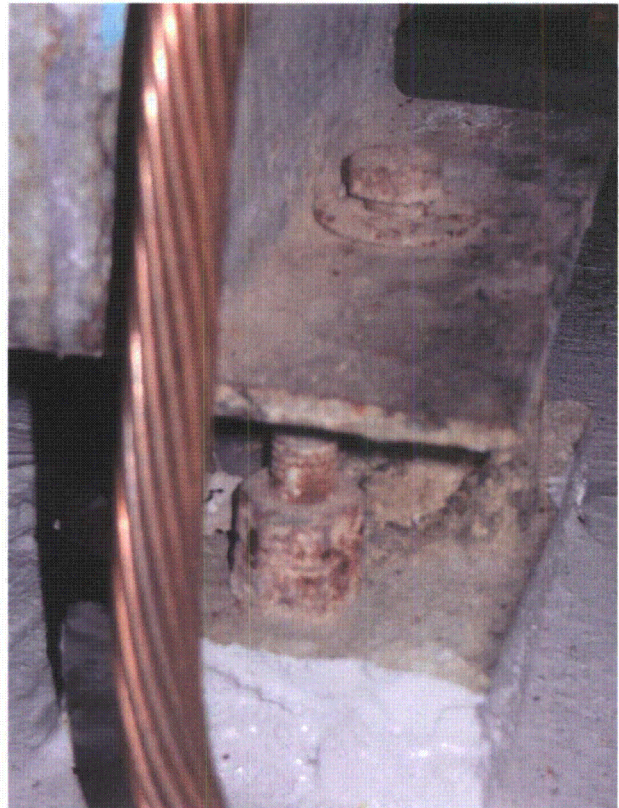
Area # CB, 2016, 34160493



Area # CB, 2016, 34160494



Area # CB, 2016, 34160495



Area # CB, 2016, 34160500

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 1974, 1111

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

- | | |
|--|-----|
| 1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
| 7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and | Yes |

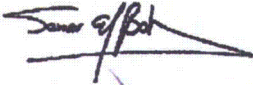
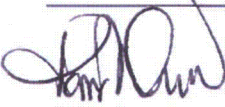
Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 1974, 1111
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by:  Samer El-Bahey Date: 11/16/2012
 Randall Wilson 11/19/2012



Area # AUX, 1974, 11116736

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2026, 1411

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

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

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

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

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

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

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

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and Yes

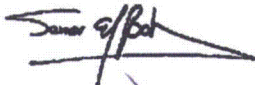
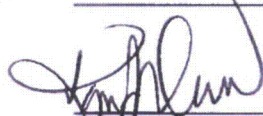
Status: Y N U

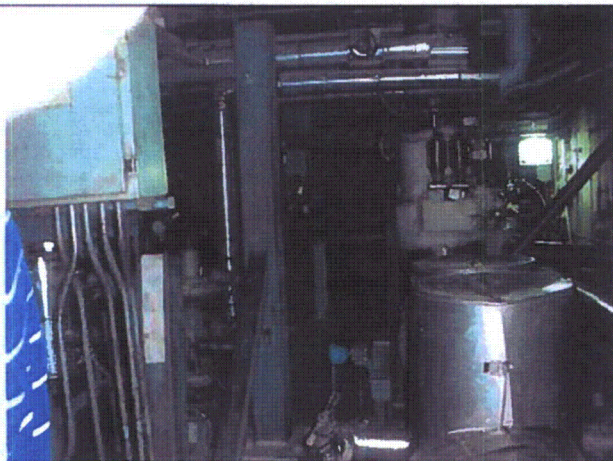
Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2026, 1411
temporary installations (e.g., scaffolding, lead shielding)?

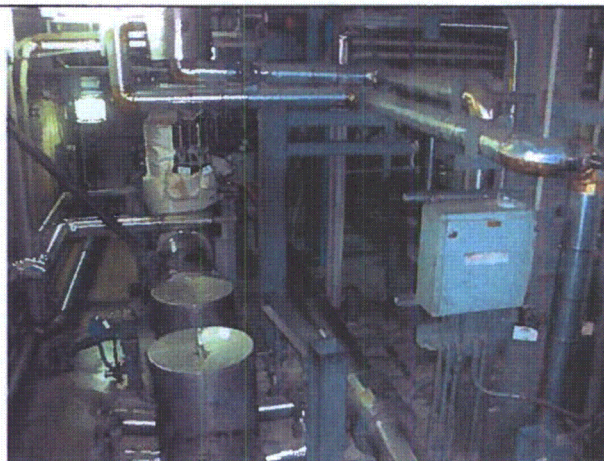
8. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? Yes

Comments

Evaluated by:  Samer El-Bahey Date: 11/16/2012
 Randall Wilson 11/19/2012



Area # AUX, 2026, 14116972

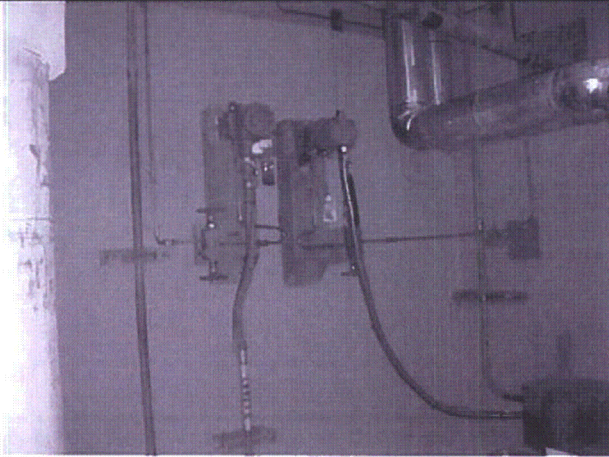


Area # AUX, 2026, 14116973

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2026, 1411



Area # AUX, 2026, 14116975

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2037.6, 1508

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

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

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

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

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

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

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

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and Yes

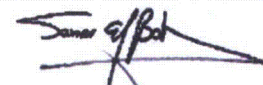

Status: Y N U

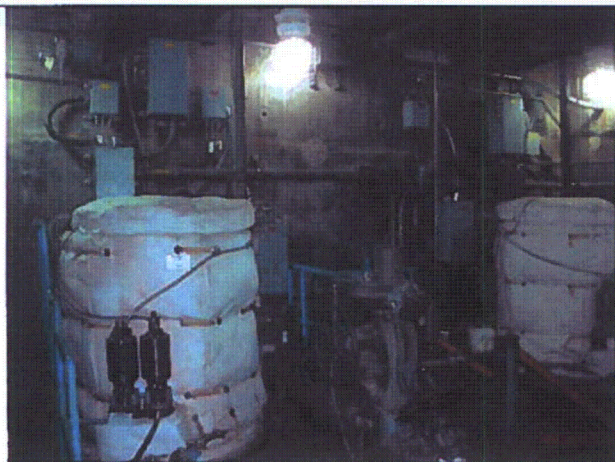
Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2037.6, 1508
temporary installations (e.g., scaffolding, lead shielding)?

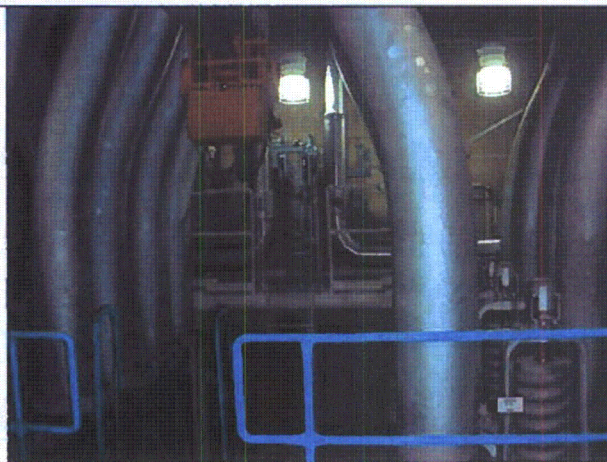
8. Have you looked for and found no other seismic conditions that could adversely affect the safety functions of the equipment in the area? Yes

Comments

Evaluated by:  Samer El-Bahey Date: 11/16/2012
 Randall Wilson 11/19/2012



Area # AUX, 2037



Area # AUX, 2037

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1503

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

- | | |
|--|-----|
| 1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
| 7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and | Yes |

Status: Y N U

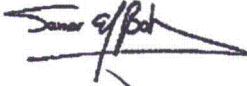

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1503
temporary installations (e.g., scaffolding, lead shielding)?

Monorail chain secured.

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

Comments

Evaluated by:  Samer El-Bahey Date: 11/16/2012
 Randall Wilson 11/19/2012

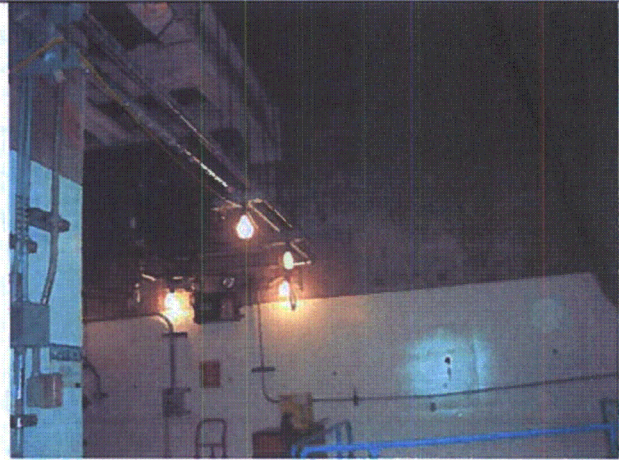
Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1503



Area # AUX, 2047



Area # AUX, 2047

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1503



Area # AUX, 2047

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1506

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? No
Vertical support 6' North of GFV0702 is missing two nuts for base pipe, one bolt is less than full nut engaged. CAR 201207502 was initiated; Corrective Job 12005523.
2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? Yes
3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? Yes
4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? Yes
5. Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? Yes
6. Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? Yes
7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and Yes

Status: Y N U

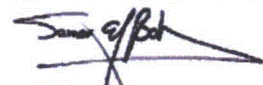

Area Walk-By Checklist (AWC)

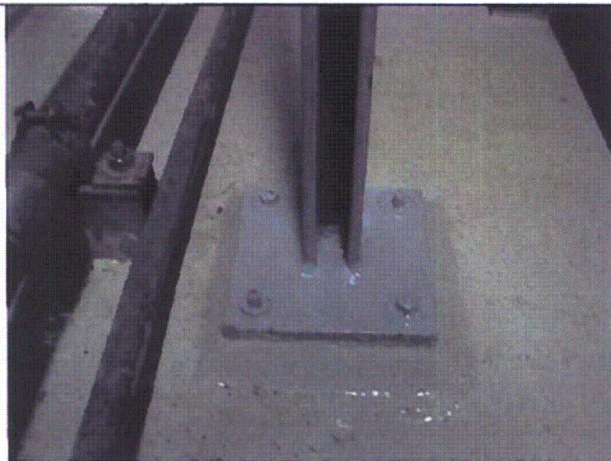
Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1506
temporary installations (e.g., scaffolding, lead shielding)?

Incomplete scaffold beside equipment, well supported laterally in both directions to frame support from roof.

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

Comments

Evaluated by:  Samer El-Bahey Date: 11/16/2012
 Randall Wilson 11/19/2012



Area # AUX, 2047



Area # AUX, 2047

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1512

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)?
J-box not mounted to wall, but acceptable based on standard design details. Yes

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

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

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

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

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

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and Yes

Status: Y N U

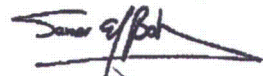

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1512
temporary installations (e.g., scaffolding, lead shielding)?

*Scaffold is well supported to wall for lateral motion, not a concern.
Permanent scaffold rack with 1" gap to GKD0327 damper, Not a concern.*

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

Comments

Evaluated by:  Samer El-Bahey Date: 11/16/2012
 Randall Wilson 11/19/2012

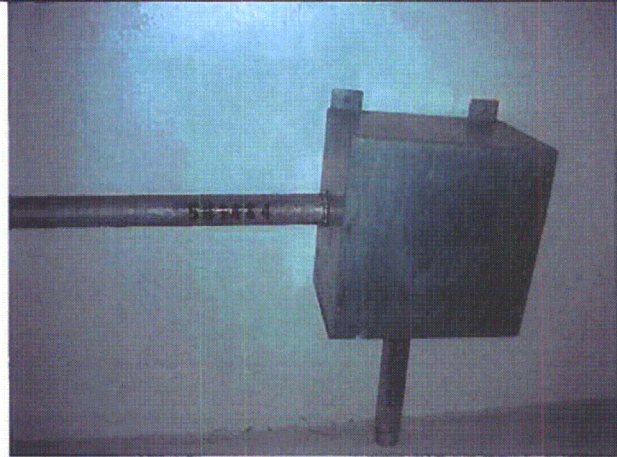
Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1512



Area # AUX, 2047

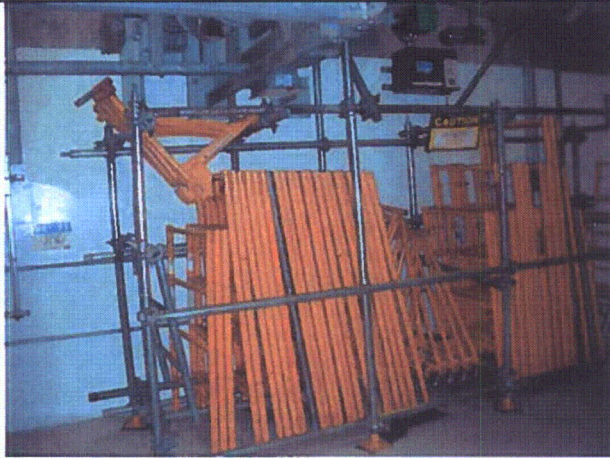


Area # AUX, 2047

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1512



Area # AUX, 2047



Area # AUX, 2047

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1513

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

- | | | |
|----|---|-----|
| 1. | Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)?
<i>Two vertical supports to tubing adjacent to GLPD10101 are missing nuts and washers, bolt situation for GKRE004 is similar to GTRE0032. CAR 201207502 was initiated; Corrective Job 12005524.</i> | No |
| 2. | Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. | Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? | Yes |
| 4. | Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? | Yes |
| 5. | Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. | Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
| 7. | Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and | Yes |

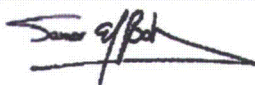

Status: Y N U

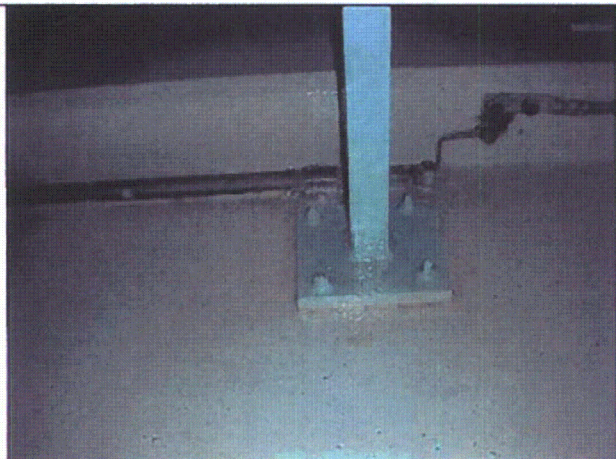
Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1513
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by:  Samer El-Bahey Date: 11/16/2012
 Randall Wilson 11/19/2012



Area # AUX, 2047

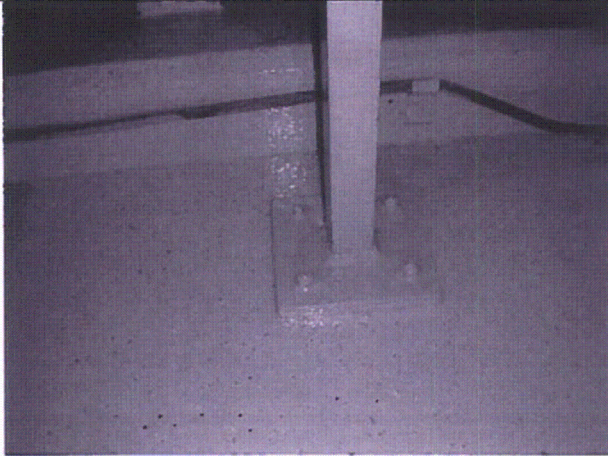


Area # AUX, 2047

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : AUX, 2047.5, 1513



Area # AUX, 2047

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 1974, 3101

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? Yes
Pipe support base (west leg of 1st support north of EFHV00040) has 2 bolts and nuts with significantly smaller sizes (3/4" and compared to 1-1/4"). Bolts SAT per 2ct-0599-MH, see Roll 1762, Frame 899. Judged not a seismic concern.
2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? Yes
*There is minor oxidation on base plates to base support legs - judged not a seismic concern.
Signs of pipe leakage in ESW train's A and B, Documented before (Per plant Personnel).*
3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? Yes
Well supported conduits on brackets from wall and roof and frames.
4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? Yes
5. Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? Yes
6. Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? Yes
7. Does it appear that the area is free of potentially adverse seismic interactions Yes

Status: Y N U

Area Walk-By Checklist (AWC)

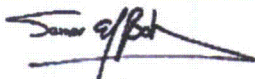
Location (Bldg, Elev, Room/Area): Area : CB, 1974, 3101

associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)?

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

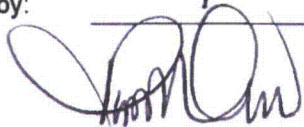
Comments

Evaluated by:



Samer El-Bahey

Date: 11/16/2012

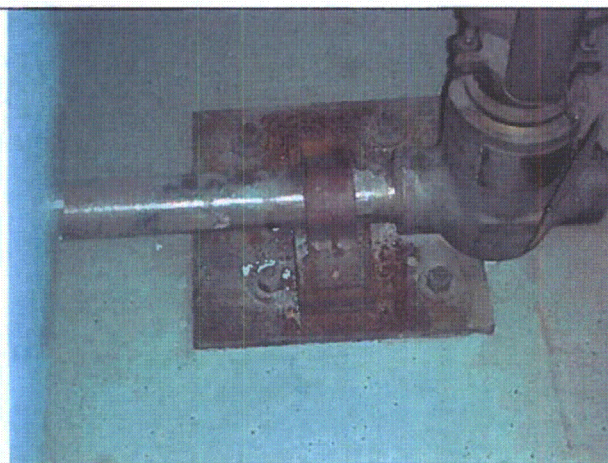


Randall Wilson

11/19/2012



Area # CB, 1974, 31016911

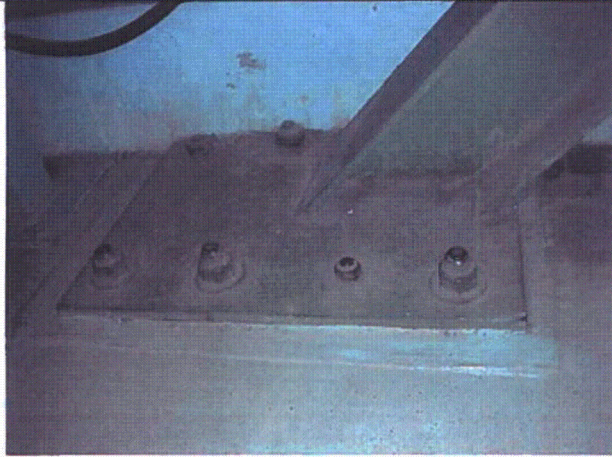


Area # CB, 1974, 31016912

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 1974, 3101



Area # CB, 1974, 31016913

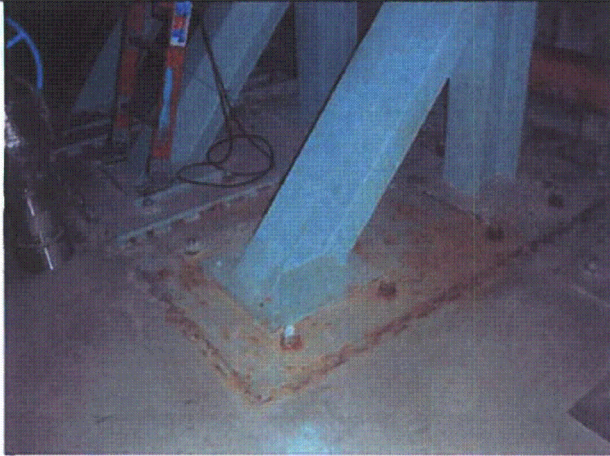


Area # CB, 1974, 31016914

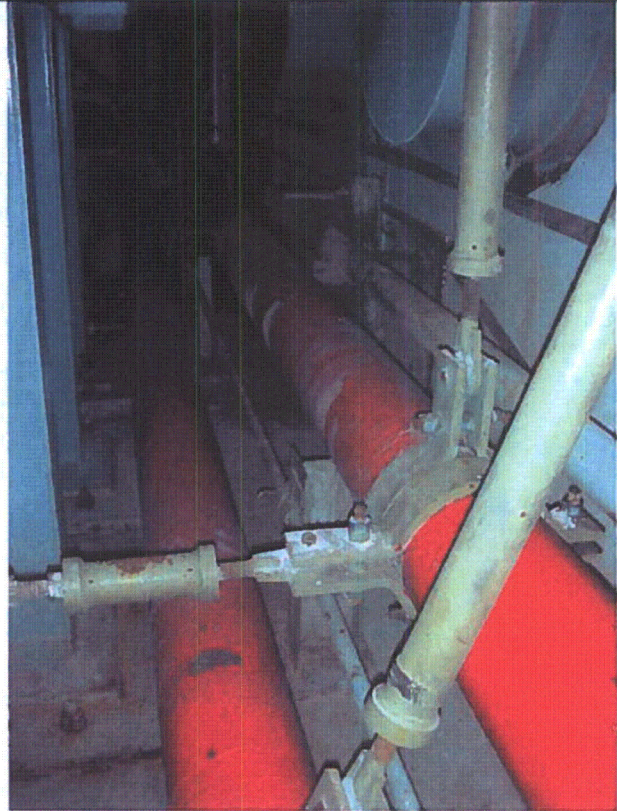
Status: Y N U

Area Walk-By Checklist (AWC)

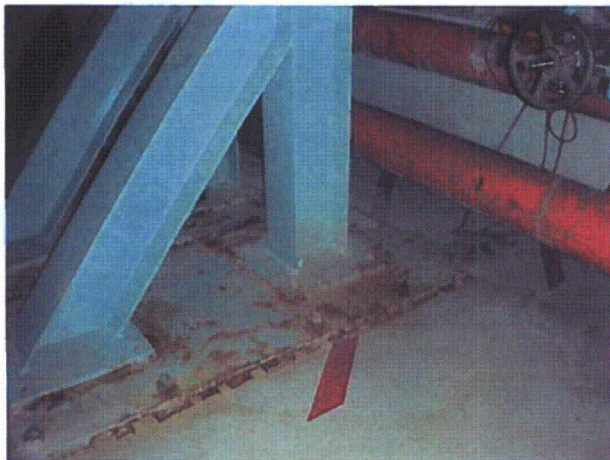
Location (Bldg, Elev, Room/Area): Area : CB, 1974, 3101



Area # CB, 1974, 31016915



Area # CB, 1974, 31016916



Area # CB, 1974, 31016917

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3408

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

- | | |
|---|-----|
| 1. Does anchorage of equipment in the area appear to be free of potentially adverse seismic conditions (if visible without necessarily opening cabinets)? | Yes |
| 2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? | Yes |
| 3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)?
<i>well supported HVAC and pipes.</i> | Yes |
| 4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)?
<i>Pipe at penetration OP341w026A has a 1/4" gap to adjacent pipe (Halon Pipe by Plant Personnel). The pipe has threaded connection and abandoned in place, therefore judged not a seismic concern.</i> | Yes |
| 5. Does it appear that the area is free of potentially adverse seismic interactions that could cause flooding or spray in the area? | Yes |
| 6. Does it appear that the area is free of potentially adverse seismic interactions that could cause a fire in the area? | Yes |
| 7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and | Yes |

Status: Y N U

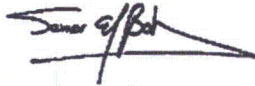
Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3408
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by:



Samer El-Bahey

Date: 11/16/2012



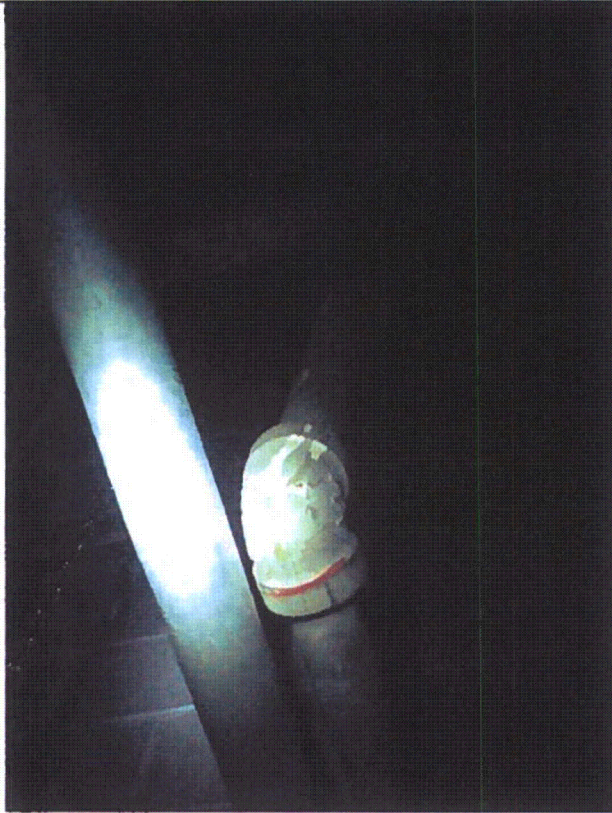
Randall Wilson

11/19/2012

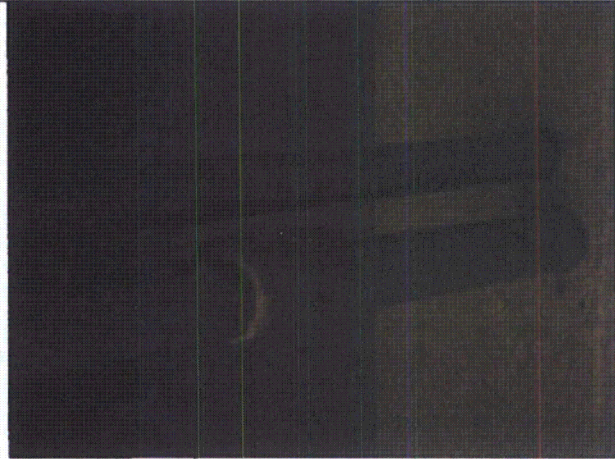
Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3408



Area # CB, 2016, 34086730



Area # CB, 2016, 34086731

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : CB, 2016, 3408



Area # CB, 2016, 34086732

Status: Y N U

Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : YRD, 833, 9102

Instructions for Completing Checklist

This checklist may be used to document the results of the Area Walk-By near one or more SWEL items. The space below each of the following questions may be used to record the results of judgments and findings. Additional space is provided at the end of this checklist for documenting other comments.

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

2. Does anchorage of equipment in the area appear to be free of significant degraded conditions? Yes
Some signs of leakage at the penetration to the wall. Also, minor rust on base plates of pipe support, judged not a seismic concern.

3. Based on a visual inspection from the floor, do the cable/conduit raceways and HVAC ducting appear to be free of potentially adverse seismic conditions (e.g., condition of supports is adequate and fill conditions of cable trays appear to be inside acceptable limits)? Yes
Observed overhead grating, judged not to be a seismic concern.

4. Does it appear that the area is free of potentially adverse seismic spatial interactions with other equipment in the area (e.g., ceiling tiles and lighting)? Yes
J-boxes in room are not mounted to wall and have a 3/8 " gap between (2UJO22 and 4U5059) also a 1/4" gap between (3UJ002 and 1U7001). Only cables and no sensitive equipment are located inside the J-boxes (Per plant Personnel). Hence, impact effect is not a concern.

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

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

7. Does it appear that the area is free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and Yes



Status: Y N U

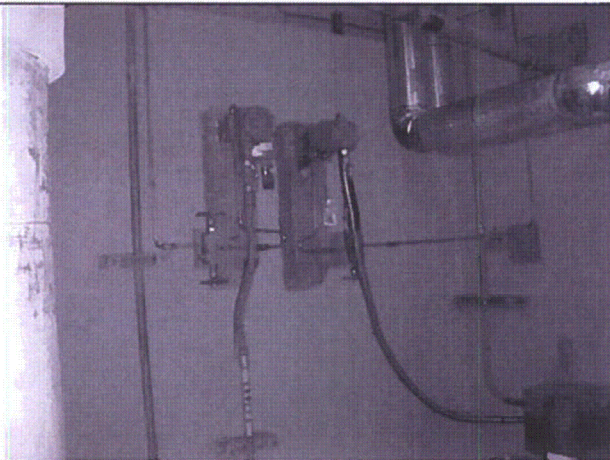
Area Walk-By Checklist (AWC)

Location (Bldg, Elev, Room/Area): Area : YRD, 833, 9102
temporary installations (e.g., scaffolding, lead shielding)?

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

Comments

Evaluated by:  Samer El-Bahey Date: 11/16/2012
 Randall Wilson 11/19/2012



BNLT9306975

APPENDIX C
LICENSING BASIS EVALUATION SUMMARY

Item No.	Item Tag/ID	Item Description	Problem Description	Status	Resolution
1	AWC-CB-2047.5-3605	Area Walk-By	<p>1) Storage Cabinet with 9.5" from RJ050F (RFR No. 17572A).</p> <p>2) Gap between SA075A and SA066A is 1/4".</p> <p>3) Ladder near RP068 will knock against cabinet (RFR 15112A).</p> <p>4) Three Drawer filing cabinets against SB030B. Storage cabinet (78" tall) is 13" away from RP053EB.</p>	N	<p>1) This is Item 8 on Drawing M-2G052. This item was addressed on page 15 of RFR 17572A. There is no adverse seismic concern.</p> <p>2) Cabinet SA066A is considered rigid in its strong axis direction. Cabinet SA075A will oscillate in its weak axis direction. Since depth is 24", it is conservatively assumed to have a frequency of 10.8 Hz (Per NP-7146-SLR1) at Elev. 2047.5'. Callaway East SSE Response Spectra is used with 10.8Hz frequency and a 1.0g is extracted. Using a SF of 1.6, Damping of 3%, the response maximum displacement will be 0.15"<0.25". There is no adverse seismic concern. This conclusion is based on the use of the component displacement equation described on pg 5-1 and obtained from Reference 33.</p> <p>3) Ladder will be addressed in CAR 201206775. Restraint will be corrected, no job required. CEC reports that this action in CAR 201206775 has been closed.</p> <p>4) These are items 13 and 14 on Dwg M-2G052. Item 13 (6' Supply Cabinet) is restrained with shallow wall anchors per note on drawing. The associated RFR 15112A states to provide a restraint having strength of 2.5 times the weight of the item and contents. For Item 14, the 3 drawer filing cabinet; the Seismic II/I evaluation on Page 4 of 7, specifically paragraph 5 documents the approval to store this item. There is no adverse seismic concern.</p>

Item No.	Item Tag/ID	Item Description	Problem Description	Status	Resolution
2	CEF01A	ESW ULTIMATE HEAT SINK COOLING TOWER FAN A	Degradation is visible in anchorage.	N	CAR 201206518 was initiated with job No. 12004830 to investigate the extent of condition. Completion date is expected by the end of Refueling Outage 20, currently scheduled to begin 10/4/2014.
3	JELT0001	EMERG F/O DAY TK A LEV XMTR	1/2" gap between mounting structure and unistrut.	Y	The 1/2" gap between the mount structure (TS 6 x 6 x 1/2) and the unistrut bracket is approximately 40" high with approximately 30lbs on edge of mount structure and self-weight. The fundamental frequency of the mount was calculated using the equation $f_n = (1/2 * \pi) * \sqrt{3EI/mL^3} = 65 \text{ Hz}$, where $L=40"$ and $I=48.3 \text{ in}^4$, $m = (30\text{lbs} + 42.1\text{lbs} * 3.33') / 386 = 4.4E-4$. This corresponds to a spectral acceleration of 0.3g. The maximum top displacement was then calculated to be $6.9E-4 < 1/2"$. Therefore, no adverse condition exists. This conclusion is based on the use of the component displacement equation described on pg 5-1 and obtained from Reference 33.
4	AWC-AUX-1974-1126	Area Walk-By	Instrument tubing support with no grout under base plate EMC0001 (Permanently removed from service)	N	CAR 201206775 was created to investigate if there are any safety related items in the room that could have seismic interaction issues with the tubing support. Completion date is expected by the end of Refueling Outage 20, currently scheduled to begin 10/4/2014.
5	EEC01A	FUEL POOL COOLING HEAT EXCHANGER	Most nuts are not seated in contact with saddle base (Raised 1/16")	N	CAR 201206775 was initiated. CEC reports that this action in CAR 201206775 has been closed.
6	PEC01A	FUEL POOL COOLING PUMP	Missing Washers for all anchor bolts	N	CAR 201206775 was initiated. CEC reports that this action in CAR 201206775 has been closed.

Item No.	Item Tag/ID	Item Description	Problem Description	Status	Resolution
7	SGK05A	CLASS IE ELEC EQUIP A/C UNIT	Two bolts and skid are corroded and area is damp.	N	CAR 201207170 was initiated.
8	NN13	7.5 KVA	Light on chains supported on ceiling can swing into cabinet	Y*	CAR 20126775 was initiated and examined the seismic interaction effect between NN13 and the Light support. Investigation concluded that no significant effect will occur. Hence, no adverse seismic concern.
9	AWC-CB-2016-3414	Area Walk-By	1/2" gap between NK03 and NK73	Y	Cabinet NK03 is considered rigid in its strong axis direction. Cabinet NK73 will oscillate in its weak axis direction. Since the depth is just 17", it is conservatively assumed to have a low frequency range with the peak response acceleration at elevation 2016'. Callaway East SSE Response Spectra is used with 8Hz frequency and a 1.6g is extracted. Using a SF of 1.6, Damping of 3%, the response maximum displacement will be 0.39" < 0.5". Therefore, there is no adverse seismic concern. This conclusion is based on the use of the component displacement equation described on pg 5-1 and obtained from Reference 33.
10	AWC-CB-1974-3101	Area Walk-By	Pipe support base (West leg of 1st support North of EFHV0040) has 2 bolts and nuts with significantly smaller sizes (3/4" compared to 1-1/4")	Y	Document MTDN 2ct-0599-MH, (Roll 1762, Frame 899) evaluated the bolts and concluded that they were satisfactory. There is no adverse seismic concern.
11	AWC-AUX-2047.5-1506	Area Walk-By	Vertical support 6 ft north of GFV0702 is missing two base plate nuts and one bolt has less than a full nut engagement.	N	CAR 201207502 was initiated; Corrective Job 12005523. CEC reports that Job 12005523 has been completed.
12	AWC-AUX-2047.5-1513	Area Walk-By	1) Two vertical supports to tubing adjacent to GLPD10101 are missing nuts and washers. 2) Bolt situation for GKRE004 is similar to GTRE0032	N	1) CAR 201207502 was initiated; Corrective Job 12005524. CEC reports that Job 12005524 has been completed. 2) Drawing J-361-00314 addresses the bolt situation for GKRE004.

Item No.	Item Tag/ID	Item Description	Problem Description	Status	Resolution
13	TEG01A	CCW SURGE TANK A	Two valves (top and bottom) of tank are connected to a vertical pipe that is supported at close intervals. Pipe stress analysis may have been done to check pipe flexibility.	Y	From the Equipment Qualification Report M-105A-68 (page 4A), it specifies that the natural frequency in any direction is greater than 33 Hz, from which it is concluded in page 5A that the equipment is rigidly connected at the support legs. Hence no differential movement will be encountered between the tank and the pipe and the pipe is judged to be adequate for flexibility concerns. There is no adverse seismic concern.
14	NK01	125 VDC BUS SWITCHBOARD	<p>1) Cabinet NK71 has 1/8" gap to equipment side bolts.</p> <p>2) 1-1/2" gap between pipe (with threaded connections) on penetration OP41W0340 and equipment, pipe is flexible in the lateral direction and free to knock the cabinet.</p> <p>3) Anchorage was invisible during the walkdown</p>	Y**	<p>1) Cabinet NK01 will oscillate in its strong axis direction. It is assumed to have a high frequency range. Callaway East SSE Response Spectra is used with 12Hz frequency and a 0.4g is extracted. Using a SF of 1.6, Damping of 3%, the combined response maximum displacement for both cabinets will be 0.09" < 0.125". There is no adverse seismic concern. This conclusion is based on the use of the component displacement equation described on pg 5-1 and obtained from Reference 33.</p> <p>2) The fundamental frequency of the pipe was calculated as a simply supported beam using the equation $f_n = (1/2 * \pi) * \sqrt{48EI/mL^3} = 21 \text{ Hz}$, where $L=216"$, $m=(630\text{lbs}/386.4)$, $I=200 \text{ in}^3$. This corresponds to a spectral acceleration of 0.3g. The maximum top displacement was then calculated to be $6.7E-3 < 1-1/2"$. There is no adverse seismic concern. This conclusion is based on the use of the component displacement equation described on pg 5-1 and obtained from Reference 33.</p> <p>3) A follow up walkdown is scheduled to be complete by the end of Refueling Outage 20, currently scheduled to begin 10/4/2014 per job 12004989.</p>

Item No.	Item Tag/ID	Item Description	Problem Description	Status	Resolution
15	NK41	DIST 125 VDC	1) A 5/8" gap between equipment and NK51 2) Anchorage was invisible during the walkdown	Y**	1) Cabinet NK041 and adjacent cabinet will oscillate in their strong axis direction. They are assumed to have a high frequency range. Callaway East SSE Response Spectra is used with 12Hz frequency and a 0.4g is extracted. Using a SF of 1.6, Damping of 3%, the combined response maximum displacement for both cabinets will be 0.09"<0.625". There is no adverse seismic concern. This conclusion is based on the use of the component displacement equation described on pg 5-1 and obtained from Reference 33. 2) A follow up walkdown is scheduled to be complete by the end of Refueling Outage 20, currently scheduled to begin 10/4/2014 per job 12004989.
16	AWC-CB-2000-3302	Area Walk-By	Cabinet NK76 has a 1/4" gap to cabinet NK26.	Y	Cabinet NK76 and adjacent cabinet will oscillate in their strong axis direction. They are assumed to have a high frequency range. Callaway East SSE Response Spectra is used with 12Hz frequency and a 0.4g is extracted. Using a SF of 1.6, Damping of 3%, the combined response maximum displacement for both cabinets will be 0.09"<0.25". There is no adverse seismic concern. This conclusion is based on the use of the component displacement equation described on pg 5-1 and obtained from Reference 33.
17	AWC-AUX-2047.5-1501	Area Walk-By	Degraded Condition for anchor bolts of SGK04B.	N	CAR 201207170 was initiated to clean the corrosion off the bolts.

STATUS KEY:

Y – (Yes) The Seismic Licensing Basis is satisfied and no adverse seismic condition exists.

N – (No) As a result of the walkdown inspection, a corrective action was required.

Y* – (Yes) For this item, the results of the Licensing Basis evaluation (LBE) is Yes as defined above. However, the item was not opened during the at-power seismic walkdown and will require a supplemental inspection as described in Section 3.4.2.

Y** – (Yes) For this item, the results of the Licensing Basis evaluation (LBE) is Yes as defined above. However, the item was not opened during the at-power seismic walkdown. The anchorages will require future inspections as described in Section 3.4.1.

APPENDIX D
PEER REVIEW CHECKLISTS

Callaway Peer Review Checklist for SWEL

Instructions for Completing Checklist

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

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

Y N

The five safety functions were captured in the selection of SWEL 1 according to screen 3 of the guidance by using the IPEEE list in addition to components with high RAW values from the PRA model and components representing the containment function. A plant Operations representative participated in the SWEL selection meeting and screened through the list to verify that adequate safety function for each of the components on Base List 1 is provided. (MA)

The basis for selection of components in SWEL 1 covers the five functions and selection of the components was discussed on a conference call September 6, 2012 organized by Jeffrey Bass of Westinghouse. This file was transmitted in an email by Jeffrey Bass on September 5, 2012 at 3:09 pm. (TB)

No Comments (JC)

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

- a. Various types of systems?

Y N

Components on Base List 1 are grouped by system. The components that were selected for SWEL 1 represented a variety of systems that support the five safety functions as listed in Appendix E of the guidance. (MA)

Various types of systems are included in SWEL 1. This was addressed in a conference call September 6, 2012 organized by Jeffrey Bass of Westinghouse. The file with this information was transmitted in an email by Jeffrey Bass on September 5, 2012 at 3:09 pm. (TB)

No Comments (JC)

Callaway Peer Review Checklist for SWEL

- b. Major new and replacement equipment? Y N

VCS operations reviewed the total listing of plant modifications since the IPEEE and selected the modifications that should be considered as a major or new replacement. The components that were affected by these modifications and are present in Base List 1 were selected in SWEL1 for the walkdown. This was not completed during the SWEL selection meeting and needs to be verified. (MA)

Major new and replacement equipment are identified and included in SWEL 1. This was addressed in a conference call September 6, 2012 organized by Jeffrey Bass of Westinghouse. The file with this information was transmitted in an email by Jeffrey Bass on September 5, 2012 at 3:09 pm. (TB)

No Comments (JC)

- c. Various types of equipment? Y N

A variety of equipment types were selected in SWEL1. A target of 10% of the population of each type of equipment in Base List 1 was intended with a minimum of 1 component from each type. Chillers, air compressors, and motor generators were not represented in SWEL1. A justification will be provided in the Submittal Report. (MA)

Various types of equipment are included in SWEL 1. This was addressed in a conference call September 6, 2012 organized by Jeffrey Bass of Westinghouse. The file with this information was transmitted in an email by Jeffrey Bass on September 5, 2012 at 3:09 pm. (TB)

SWEL Item Number 40, FCFV313, should be Equipment Class Pneumatic-Operated Valves (7) versus Motor-Operated and Solenoid-Operated Valves. SWEL Item Number 44, GMD0001, should be Equipment Class Other (0) versus Fan (9).

SWEL Item Number 50, JEL0001, should be Equipment Class Instrumentation Racks (18) versus Other (0). (JC)

- d. Various environments? Y N

Components in various environmental conditions such as cool/dry, hot/dry, hot/humid, mild/chemical, and mild/dry are included in SWEL1 selection. (MA)

Various types of environments are included in SWEL 1. This was addressed in a conference call September 6, 2012 organized by Jeffrey Bass of Westinghouse. The file with this information was transmitted in an email by Jeffrey Bass on September 5, 2012 at 3:09 pm. (TB)

No Comments (JC)

Callaway Peer Review Checklist for SWEL

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

The IPEEE report was reviewed and a representative sample of the IPEEE outliers that required hardware enhancement was selected in SWEL1. (MA)

Equipment enhanced based on the IPEEE program are included in SWEL 1. This was addressed in a conference call September 6, 2012 organized by Jeffrey Bass of Westinghouse. The file with this information was transmitted in an email by Jeffrey Bass on September 5, 2012 at 3:09 pm. (TB)

No Comments (JC)

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

RAW values from the plant PRA model were used for consideration of components with high risk in the SWEL1 components selection. (MA)

Risk insights were considered in developing SWEL 1. This was addressed in a conference call September 6, 2012 organized by Jeffrey Bass of Westinghouse. The file with this information was transmitted in an email by Jeffrey Bass on September 5, 2012 at 3:09 pm. (TB)

Callaway PRA Risk Achievement Worth (RAW) for Internal Events/Core Damage Frequency (CDF) was utilized to determine potentially risk-significant SSCs. (JC)

3. For SWEL 2:

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

A base list of all Spent Fuel Pool seismic category one components was generated for use in the SWEL2 selection process. (MA)

Spent fuel pool items were considered and included as appropriate in SWEL 2. This was addressed in a conference call September 6, 2012 organized by Jeffrey Bass of Westinghouse. The file with this information was transmitted in an email by Jeffrey Bass on September 5, 2012 at 3:09 pm. (TB)

No Comments (JC)

Callaway Peer Review Checklist for SWEL

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

From Base List 2, a representative sample of components was selected for SWEL 2 and individual components were excluded based on various justifications (i.e., addressed in SWEL 1, redundancy, structural component, and others) that will be documented in the Submittal Report. (MA)

Appropriate justification was documented for items not included in SWEL 2.. This was addressed in a conference call September 6, 2012 organized by Jeffrey Bass of Westinghouse. The file with this information was transmitted in an email by Jeffrey Bass on September 5, 2012 at 3:09 pm. (TB)

Spent Fuel Pool equipment that passed screen 2 and are part of Train A were selected (since Callaway Train B will be unavailable during the scheduled seismic walkdown). (JC)

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

Monzer Allam, the Westinghouse peer reviewer, was present at the 80% Seismic Walkdown Equipment List (SWEL) Development Meeting. Monzer actively participated in the SWEL development meeting by challenging equipment selections and provided feedback as to what systems or equipment types in his opinion had too few representations. He responded to a number of questions addressed to him regarding the intent of the EPRI guidelines/training and how we were including certain items or discussing how we would inspect them during the actual walkdowns. He actively discussed the bases for selection philosophy and strategy with the two primary SWEL developers (Terry Keller and Derek Seaman). The introduction material for the SWEL development meeting highlighted the 5 safety functions and the 5 different screens that would be used to arrive at the SWEL list. The 2.5 day meeting also addressed Spent Fuel Pool items and concluded that there were no Rapid Drain Down items to be flagged. (MA)

None (TB)

Supplying "Callaway Selection of SSC's (8-30-12)" facilitated the Peer-Review of SWEL because it contained a lot of information that was not included in Attachment 1 of SCP-12-94. (JC)

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

Callaway Peer Review Checklist for SWEL

Peer Reviewer #1: Monzer Allem  Date: 9/26/2012

Peer Reviewer #2: Todd Bacon  Date: 9/26/12

Peer Reviewer #3: James L. Cunningham  Date: 9/26/2012

APPENDIX E
BASE LIST 1

Callaway Base List 1						
Base List 1 Item Number	Equipment ID	Description	Equipment Location ⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support ⁽²⁾)
1	ABHV0005	MAIN STM LOOP 2 TO TDAFW PUMP	AUX	Yes	Yes	DHR
2	ABHV0006	MAIN STM LOOP 3 AFWP TURBINE ISO	AUX	Yes	Yes	DHR
3	ABHV0011	LOOP-4 MAIN STEAM ISOLATION VALVE	AUX	Yes	Yes	PC DHR
4	ABHV0014	LOOP-1 MAIN STEAM ISOLATION VALVE	AUX	Yes	Yes	PC DHR
5	ABHV0017	LOOP-2 MAIN STEAM ISOLATION VALVE	AUX	Yes	Yes	PC DHR
6	ABHV0020	LOOP-3 MAIN STEAM ISOLATION VALVE	AUX	Yes	Yes	PC DHR
7	ABPT001	STM GEN A STEAMLIN PRESSURE	AUX	Yes	Yes	PC DHR
8	ABPT002	STM GEN B STEAMLIN PRESSURE	AUX	Yes	Yes	PC DHR
9	ABPT003	STM GEN C STEAMLIN PRESSURE	AUX	Yes	Yes	PC DHR
10	ABPT004	STM GEN D STEAMLIN PRESSURE	AUX	Yes	Yes	PC DHR
11	ABPT514	STEAM GEN A PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
12	ABPT515	STEAM GEN A PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
13	ABPT516	STEAM GEN A PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
14	ABPT524	STEAM GEN B PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
15	ABPT525	STEAM GEN B PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
16	ABPT526	STEAM GEN B PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
17	ABPT534	STEAM GEN C PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
18	ABPT535	STEAM GEN C PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
19	ABPT536	STEAM GEN C PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
20	ABPT544	STEAM GEN D PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
21	ABPT545	STEAM GEN D PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
22	ABPT546	STEAM GEN D PRESSURE TRANSMITTER	AUX	Yes	Yes	RC PC
23	ABPV001	SG A ATMOSPHERIC RELIEF VLV	AUX	Yes	Yes	PC DHR
24	ABPV002	SG B ATMOSPHERIC RELIEF VLV	AUX	Yes	Yes	PC DHR
25	ABPV003	SG C ATMOSPHERIC RELIEF VLV	AUX	Yes	Yes	PC DHR
26	ABPV004	SG D ATMOSPHERIC RELIEF VLV	AUX	Yes	Yes	PC DHR
27	AEFV039	EBB01A FEEDWATER ISOLATION VALVE	AUX	Yes	Yes	PC DHR
28	AEFV040	EBB01B FEEDWATER ISOLATION VALVE	AUX	Yes	Yes	PC DHR
29	AEFV041	EBB01C FEEDWATER ISOLATION VALVE	AUX	Yes	Yes	PC DHR
30	AEFV042	EBB01D FEEDWATER ISOLATION VALVE	AUX	Yes	Yes	PC DHR
31	AELT0501	STM GEN A WIDE RANGE	RB	Yes	Yes	PC DHR
32	AELT0502	STM GEN B WIDE RANGE	RB	Yes	Yes	PC DHR
33	AELT517	STM GEN LEVEL A NARROW RANGE	RB	Yes	Yes	PC DHR
34	AELT518	STM GEN LEVEL A NARROW RANGE	RB	Yes	Yes	PC DHR
35	AELT519	STM GEN LEVEL A NARROW RANGE	RB	Yes	Yes	PC DHR
36	AELT527	STM GEN B LEVEL	RB	Yes	Yes	PC DHR
37	AELT528	STM GEN B NARROW RNG LEVEL	RB	Yes	Yes	PC DHR
38	AELT529	STM GEN LEVEL B NARROW RANGE	RB	Yes	Yes	PC DHR
39	AELT537	STM GEN LEVEL C NARROW RANGE	RB	Yes	Yes	PC DHR
40	AELT538	STM GEN LEVEL C NARROW RANGE	RB	Yes	Yes	PC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
41	AELT539	STM GEN LEVEL C NARROW RANGE	RB	Yes	Yes	PC DHR
42	AELT547	STM GEN LEVEL D NARROW RANGE	RB	Yes	Yes	PC DHR
43	AELT548	STM GEN D NARROW RNG LEVEL	RB	Yes	Yes	PC DHR
44	AELT549	STM GEN LEVEL D NARROW RANGE	RB	Yes	Yes	PC DHR
45	AELT551	STM GEN A LEVEL	RB	Yes	Yes	PC DHR
46	AELT552	STM GEN B LEVEL	RB	Yes	Yes	PC DHR
47	AELT553	STM GEN C LEVEL	RB	Yes	Yes	PC DHR
48	AELT554	STM GEN D LEVEL	RB	Yes	Yes	PC DHR
49	ALFT001	AFW TO SG D FLOW TRANSMITTER	AUX	Yes	Yes	PC DHR
50	ALFT002	AFW TO SG D FLOW TRANSMITTER	AUX	Yes	Yes	PC DHR
51	ALFT003	AFW TO SG D FLOW TRANSMITTER	AUX	Yes	Yes	PC DHR
52	ALFT004	AFW TO SG D FLOW TRANSMITTER	AUX	Yes	Yes	PC DHR
53	ALFT007	AUX FDW FLO TO SG A	AUX	Yes	Yes	PC DHR
54	ALFT009	AUX FDW FLO TO SG B	AUX	Yes	Yes	PC DHR
55	ALFT011	AUX FDW FLO TO SGC	AUX	Yes	Yes	PC DHR
56	ALHV005	MTR DRIV AFWP DISCH HDR TO SG D ISO VLV	AUX	Yes	Yes	PC DHR
57	ALHV006	TURB DRIVEN AFWP DISCH HDR TO SG D ISO	AUX	Yes	Yes	PC DHR
58	ALHV007	MTR DRIV AFWP DISCH HDR TO SG A ISO VLV	AUX	Yes	Yes	PC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
59	ALHV008	TURB DRIVEN AFWP DISCH HDR TO SG A ISO	AUX	Yes	Yes	PC DHR
60	ALHV009	MTR DRIV AFWP DISCH HDR TO SG B ISO VLV	AUX	Yes	Yes	PC DHR
61	ALHV010	TURB DRIVEN AFWP DISCH HDR TO SG B ISO	AUX	Yes	Yes	PC DHR
62	ALHV011	MTR DRIV AFWP DISCH HDR TO SG G ISO VLV	AUX	Yes	Yes	PC DHR
63	ALHV012	TURB DRIVEN AFWP DISCH HDR TO SG C ISO	AUX	Yes	Yes	PC DHR
64	ALHV030	ESW TO MDAFW PUMP B 6" BTFL VLV W/LIMITQ	AUX	Yes	Yes	PC DHR
65	ALHV031	ESW TO MDAFW PUMP A 6" BTFL VLV W/LIMITQ	AUX	Yes	Yes	PC DHR
66	ALHV032	ESW SUPPLY TO PAL02 8" BTFL VLV W/LIMITQ	AUX	Yes	Yes	PC DHR
67	ALHV033	ESW TO TDAFW PUMP 8" BTFL VALVE W/LIMITQ	AUX	Yes	Yes	PC DHR
68	ALHV034	COND STOR TK TO MD AUX FW PUMP B 8" GATE VALVE	AUX	Yes	Yes	PC DHR
69	ALHV035	CONDENSATE STOR TO AUX FW PUMP A 8" GATE VALVE	AUX	Yes	Yes	PC DHR
70	ALHV036	CONDENSATE STOR TO TD AUX FW PUMP 10" GATE VALVE	AUX	Yes	Yes	PC DHR
71	ALPT0025	AFP SUCTION PRESSURE TRANSMITTER (2)	AUX	Yes	Yes	PC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
72	ALPT0026	AFP SUCTION PRESSURE TRANSMITTER (4)	AUX	Yes	Yes	PC DHR
73	ALPT037	ESFAS AFW LOW SUCTION PRESS TRANSMITTER	AUX	Yes	Yes	PC DHR
74	ALPT038	ESFAS AFW LOW SUCTION PRESS TRANSMITTER	AUX	Yes	Yes	PC DHR
75	ALPT039	ESFAS AFW LOW SUCTION PRESS TRANSMITTER	AUX	Yes	Yes	PC DHR
76	BB04A	W THERMOCOUPLE REF-JCT 1	RB	Yes	Yes	DHR
77	BB04B	W THERMOCOUPLE JUNCTION BOX-JCT 2	RB	Yes	Yes	DHR
78	BB07	DC CONTACT CABINET	AUX	Yes	Yes	PC DHR
79	BB08	DC CONTACT CABINET	AUX	Yes	Yes	PC DHR
80	BBHV8000A	PZR POWER RELIEF PCV-455A INLET ISO	RB	Yes	Yes	PC DHR
81	BBHV8000B	PZR POWER RELIEF PCV-456A INLET ISO	RB	Yes	Yes	PC DHR
82	BBLIS1311	RV SUBCOOLING MONITOR TRN A	AUX	Yes	Yes	RC
83	BBLIS1312	RV SUBCOOLING MONITOR TRN A	AUX	Yes	Yes	RC
84	BBLIS1321	RV SUBCOOLING MONITOR TRN B	AUX	Yes	Yes	RC
85	BBLIS1322	RV SUBCOOLING MONITOR TRN B	AUX	Yes	Yes	RC
86	BBLT459	PRESS LEVEL (NARROW RANGE)	RB	Yes	Yes	IC
87	BBLT460	PRESS LEVEL (NARROW RANGE)	RB	Yes	Yes	IC
88	BBLT461	PRESS LEVEL (NARROW RANGE)	RB	Yes	Yes	IC
89	BBLT462	PRESS LEVEL (WIDE RANGE)	RB	Yes	Yes	IC

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
90	BBPCV455A	PZR POWER OPERATED RELIEF VALVE	RB	Yes	Yes	PC DHR
91	BBPCV456A	PZR POWER OPERATED RELIEF VALVE	RB	Yes	Yes	PC DHR
92	BBPT403	RCS WIDE RANGE PR XMTR	AUX	Yes	Yes	PC
93	BBPT405	RCS WR PRESSURE TRANSMITTER	AUX	Yes	Yes	PC
94	BBPT455	PRESSURIZER PRESSURE	RB	Yes	Yes	PC
95	BBPT456	PRESSURIZER PRESSURE	RB	Yes	Yes	PC
96	BBPT457	PRESSURIZER PRESSURE	RB	Yes	Yes	PC
97	BBPT458	PRESSURIZER PRESSURE	RB	Yes	Yes	PC
98	BBPV8702A	RCS HOT LEG 1 TO RHR PUMP A SUCTION	RB	Yes	Yes	DHR
99	BBPV8702B	RCS HOT LEG 4 TO RHR PUMP B SUCTION	RB	Yes	Yes	DHR
100	BBTE413A	REC COOLANT LP 1 HOT LEG	RB	Yes	Yes	DHR
101	BBTE413B	REC COOLANT LP 1 COLD LEG	RB	Yes	Yes	DHR
102	BBTE423A	REC COOLANT LP 2 HOT LEG	RB	Yes	Yes	DHR
103	BBTE423B	REC COOLANT LP 2 COLD LEG	RB	Yes	Yes	DHR
104	BBTE433A	REC COOLANT LP 3 HOT LEG	RB	Yes	Yes	DHR
105	BBTE433B	REC COOLANT LP 3 COLD LEG	RB	Yes	Yes	DHR
106	BBTE443A	REC COOLANT LP 4 HOT LEG	RB	Yes	Yes	DHR
107	BBTE443B	REC COOLANT LP 4 COLD LEG	RB	Yes	Yes	DHR
108	BGFCV0121	CENTRIFUGAL CHG PMP FLOW CONTROL	AUX	Yes	Yes	RC PC IC
109	BGFCV0124	CVCS NCP DISCH HDR FCV	AUX	Yes	Yes	PC IC

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
110	BGFT215A	TOTAL SEAL INJECTION FLOW TRANSMITTER (4)	AUX	Yes	Yes	IC
111	BGFT215B	TOTAL SEAL INJECTION FLOW TRANSMITTER (2)	AUX	Yes	Yes	IC
112	BGHV8100	SEAL WATER RETURN CONTAINMENT ISO VLV	AUX	Yes	Yes	IC
113	BGHV8105	CHARGING PUMPS TO REGEN HX/CTMT ISO	AUX	Yes	Yes	PC IC CF
114	BGHV8106	CHARGING PUMPS TO REGENERATIVE HX ISO	AUX	Yes	Yes	PC IC
115	BGHV8110	CHARGING PUMPS MINIMUM FLOW VLV	AUX	Yes	Yes	RC IC
116	BGHV8111	CHARGING PUMPS MINIMUM FLOW VLV	AUX	Yes	Yes	RC IC
117	BGHV8112	SEAL WATER RETURN CTMT ISO VLV	RB	Yes	Yes	IC CF
118	BGHV8152	LETDOWN SYSTEM CONTAINMENT ISO VLV	AUX	Yes	Yes	IC CF
119	BGHV8160	LETDOWN SYSTEM CONTAINMENT ISO VLV	RB	Yes	Yes	IC CF
120	BGLCV112B	VCT LOW LEVEL ISO GATE VALVE ON BG020HCB-4	AUX	Yes	Yes	RC IC
121	BGLCV112C	VCT LOW LEVEL ISO GATE VALVE ON BG020HCB-4	AUX	Yes	Yes	RC IC
122	BLHV8047	REACTOR M/U WATER CONTAINMENT ISO	AUX	Yes	Yes	IC CF
123	BMHV001	SG A BLOWDOWN AFAS ISO	AUX	Yes	Yes	PC IC CF
124	BMHV002	SG B BLOWDOWN AFAS ISO	AUX	Yes	Yes	PC IC CF
125	BMHV003	SG C BLOWDOWN AFAS ISO	AUX	Yes	Yes	PC IC CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
126	BMHV004	SG D BLOWDOWN AFAS ISO	AUX	Yes	Yes	PC IC CF
127	BNHV003	RWST SUPPLY TO CTMT SPRAY PUMP B	AUX	Yes	Yes	CF
128	BNHV004	RWST SUPPLY TO CTMT SPRAY PUMP A	AUX	Yes	Yes	CF
129	BNHV8806A	RWST TO SAFETY INJ PUMP SUCTION	AUX	Yes	Yes	IC DHR
130	BNHV8806B	RWST TO SAFETY INJ PUMP SUCTION	AUX	Yes	Yes	IC DHR
131	BNHV8812A	RWST TO RHR PUMP A SUCTION	AUX	Yes	Yes	IC DHR
132	BNHV8812B	RWST TO RHR PUMP B SUCTION	AUX	Yes	Yes	IC DHR
133	BNHV8813	SAFETY INJECTION TO RWST ISOLATION VLV	AUX	Yes	Yes	IC DHR
134	BNLCV112D	CHARGING PUMPS SUCTION FROM RWST	AUX	Yes	Yes	RC IC
135	BNLCV112E	CHARGING PUMPS SUCTION FROM RWST	AUX	Yes	Yes	RC IC
136	BNLT930	RWST LEVEL TRANSMITTER (1)	YRD	Yes	Yes	RC IC DHR
137	BNLT931	RWST LEVEL TRANSMITTER (2)	YRD	Yes	Yes	RC IC DHR
138	BNLT932	RWST LEVEL TRANSMITTER (3)	YRD	Yes	Yes	RC IC DHR
139	BNLT933	RWST LEVEL TRANSMITTER (4)	YRD	Yes	Yes	RC IC DHR
140	CEF01A	ESW ULTIMATE HEAT SINK COOLING TOWER FAN A	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
141	CEF01B	ESW ULTIMATE HEAT SINK COOLING TOWER FAN B	ULTIMATE HEAT SINK	Yes	Yes	IC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
142	CEF01C	ESW ULTIMATE HEAT SINK COOLING TOWER FAN C	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
143	CEF01D	ESW ULTIMATE HEAT SINK COOLING TOWER FAN D	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
144	CGD01A	ESW PUMP HOUSE SUPPLY FAN	ESW	Yes	Yes	RC PC IC DHR CF
145	CGD01B	ESW PUMP HOUSE SUPPLY FAN	ESW	Yes	Yes	RC PC IC DHR CF
146	CGD02A	COOL TWR ELEC RM SPLY FAN A	COOLING TOWERS	Yes	Yes	IC DHR
147	CGD02B	COOL TWR ELEC RM SPLY FAN B	COOLING TOWERS	Yes	Yes	IC DHR
148	CGM01A	DIESEL GENERATOR BLDG SUPPLY FAN	DGB	Yes	Yes	RC PC IC DHR CF
149	CGM01B	DIESEL GENERATOR BLDG SUPPLY FAN	DGB	Yes	Yes	RC PC IC DHR CF
150	CGN03A	CONTAINMENT HYDROGEN MIXING FAN	RB	Yes	Yes	CF
151	EBG01	LETDOWN HEAT EXCHANGER	AUX	Yes	Yes	DHR
152	EBG02	EXCESS LETDOWN HEAT EXCHANGER	RB	Yes	Yes	DHR
153	EBG03	SEAL WATER HEAT EXCHANGER	AUX	Yes	Yes	PC IC
154	EEG01A	COMPONENT COOL WATER HEAT EXCHANGER	AUX	Yes	Yes	RC PC IC DHR
155	EEG01B	COMPONENT COOL WATER HEAT EXCHANGER	AUX	Yes	Yes	RC PC IC DHR
156	EEJ01A	RESIDUAL HEAT REMOVAL HEAT EXCHANGER	AUX	Yes	Yes	DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
157	EEJ01B	RESIDUAL HEAT REMOVAL HEAT EXCHANGER	AUX	Yes	Yes	DHR
158	EF155	ESW CONTROL PANEL	ESW	Yes	Yes	RC PC IC DHR CF
159	EF156	ESW CONTROL PANEL	ESW	Yes	Yes	RC PC IC DHR CF
160	EF169	PNL CONT ESW (SEP GP 1&5)	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
161	EF170	PNL CONT ESW (SEP GP 4&6)	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
162	EFPE0053	ESW PMP A DISCH FLOW ELEM	CB/CC	Yes	Yes	IC UHS
163	EFPE0054	ESW PMP B DISCH FLOW ELEM	CB/CC	Yes	Yes	IC UHS
164	EFPT053	ESW PUMP A DISCHARGE FLOW TRANSMITTER	CB/CC	Yes	Yes	RC PC IC DHR CF
165	EFPT054	ESW PUMP B DISCHARGE FLOW TRANSMITTER	CB/CC	Yes	Yes	RC PC IC DHR CF
166	EFHV0047	ESW TRN A FROM CTMT AIR CLRS BYP ISO HV	AUX	Yes	Yes	CF
167	EFHV0048	ESW TRN B FROM CTMT AIR CLRS BYP ISO HV	AUX	Yes	Yes	CF
168	EFHV0065	ESW UHS COOL-TWR TRN A BYP HV	ULTIMATE HEAT SINK	Yes	Yes	IC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location ⁽¹⁾	Screen No. 1 (SC 1 Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support ⁽²⁾)
169	EFHV0066	ESW UHS COOL-TWR TRN B BYP HV	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
170	EFHV023	ESW A/SERVICE WATER CROSS CONNECT VALVE	CB/CC	Yes	Yes	RC PC IC DHR CF
171	EFHV024	ESW B/SERVICE WATER CROSS CONNECT VALVE	CB/CC	Yes	Yes	RC PC IC DHR CF
172	EFHV025	ESW A/SERVICE WATER CROSS CONNECT VALVE	CB/CC	Yes	Yes	RC PC IC DHR CF
173	EFHV026	ESW B/SERVICE WATER CROSS CONNECT VALVE	CB/CC	Yes	Yes	RC PC IC DHR CF
174	EFHV031	ESW A TO CTMT AIR COOLERS BUTT VLV	AUX	Yes	Yes	RC PC IC DHR CF
175	EFHV032	ESW B TO CTMT AIR COOLERS BUTTERFLY VALVE	AUX	Yes	Yes	RC PC IC DHR CF
176	EFHV033	ESW A TO CTMT AIR COOLERS BUTTERFLY VLV	RB	Yes	Yes	RC PC IC DHR CF
177	EFHV034	ESW B T CTMT AIR COOLERS BUTTERFLY VLV	RB	Yes	Yes	RC PC IC DHR CF
178	EFHV037	ESW A TO UNTIMATE HEAT SINK THROTTLED	CB/CC	Yes	Yes	RC PC IC DHR CF
179	EFHV038	ESW B TO ULTIMATE HEAT SINK	CB/CC	Yes	Yes	RC PC IC DHR CF
180	EFHV039	ESW TRAIN A TO SW CROSS CONNECT VALVE	CB/CC	Yes	Yes	RC PC IC DHR CF
181	EFHV040	ESW TRAIN B TO SW CROSS CONNECT VALVE	CB/CC	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
182	EFHV041	ESW TRAIN A TO SW CROSS CONNECT VALVE	CB/CC	Yes	Yes	RC PC IC DHR CF
183	EFHV042	ESW TRAIN B TO SW CROSS CONNECT VALVE	CB/CC	Yes	Yes	RC PC IC DHR CF
184	EFHV043	ESW TRAIN A TO AIR COMPRESSOR ISO VALVE	AUX	Yes	Yes	RC PC IC DHR CF
185	EFHV044	ESW TRAIN B TO AIR COMPRESSOR ISO VALVE	AUX	Yes	Yes	RC PC IC DHR CF
186	EFHV045	ESW A FROM CTMT AIR COOLERS BUTTERFLY VLV	RB	Yes	Yes	RC PC IC DHR CF
187	EFHV046	ESW B FROM CTMT AIR COOLERS BUTTERFLY VLV	RB	Yes	Yes	RC PC IC DHR CF
188	EFHV049	ESW A FROM CTMT AIR CLRS BUTT VLV	AUX	Yes	Yes	RC PC IC DHR CF
189	EFHV050	ESW B FROM CTMT AIR COOLERS BUTTERFLY VALVE	AUX	Yes	Yes	RC PC IC DHR CF
190	EFHV051	ESW A TO CCW HX A	AUX	Yes	Yes	RC PC IC DHR CF
191	EFHV052	ESW B TO CCW HX B	AUX	Yes	Yes	RC PC IC DHR CF
192	EFHV059	ESW TRAIN A FROM CCW HX ISO VALVE	AUX	Yes	Yes	RC PC IC DHR CF
193	EFHV060	ESW TRAIN B FROM CCW HX ISO VALVE	AUX	Yes	Yes	RC PC IC DHR CF
194	EFHV097	ESW PUMP A DISCHARGE RECIRC VALVE	ESW	Yes	Yes	RC PC IC DHR CF
195	EFHV098	ESW PUMP B DISCHARGE RECIRC VALVE	ESW	Yes	Yes	RC PC IC DHR CF
196	EFPDT0019	ESW SELF-CLEANING STR A DP XMTR	ESW	Yes	Yes	IC DHR
197	EFPDT0020	ESW SELF-CLEANING STRAINER B DP XMTR	ESW	Yes	Yes	IC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location ⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support ⁽²⁾)
198	EFPDT043	ESW TO AIR COMPRESSOR ISO	AUX	Yes	Yes	RC PC IC DHR CF
199	EFPDT044	ESW TO AIR COMPRESSOR ISO	AUX	Yes	Yes	RC PC IC DHR CF
200	EFPDV019	ESW SELF-CLEANING STRAINER A TRASH VLV	ESW	Yes	Yes	RC PC IC DHR CF
201	EFPDV020	ESW SELF-CLEANING STRAINER B TRASH VLV	ESW	Yes	Yes	RC PC IC DHR CF
202	EFPT0001	ESW PUMP DISCHARGE	ESW	Yes	Yes	RC PC IC DHR CF
203	EFPT0002	ESW PUMP DISCHARGE	ESW	Yes	Yes	RC PC IC DHR CF
204	EFTE0061	ESW A TEMP TO POWER BLOCK	CB/CC	Yes	Yes	RC PC IC DHR CF
205	EFTE0062	ESW B TEMPT TO POWER BLOCK	CB/CC	Yes	Yes	RC PC IC DHR CF
206	EFTE0067A	ESW TRN A TO UHS COOL TOWERS A & C TEMP ELEM	CB/CC	Yes	Yes	IC DHR
207	EFTE0068A	ESW TRN B TO UHS COOL TOWERS B & D TEMP ELEM	CB/CC	Yes	Yes	IC DHR
208	EFV0104	ESW PMP A DISCH UPSTRM ISOLATION	CB/CC	Yes	Yes	IC UHS
209	EFV0107	ESW PMP A DISCH DNSTRM ISO	CB/CC	Yes	Yes	IC UHS
210	EFV0113	ESW PMP B DISCH UPSTRM ISO	CB/CC	Yes	Yes	IC UHS
211	EFV0116	ESW PMP B DISCH DNSTRM ISO	CB/CC	Yes	Yes	IC UHS
212	EGFT0128	CCW HX OUTLET TO RCP BYPASS	AUX	Yes	Yes	RC IC DHR
213	EGFT0129	CCW HX OUTLET TO RCP BYPASS	AUX	Yes	Yes	RC IC DHR
214	EGFT062	RCP OUT FLOW <TIME CRITICAL ACTION EQUIPMENT>	AUX	Yes	Yes	IC

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
215	EGHV0011	ESW TO CCW TRN A UPSTRM HV	AUX	Yes	Yes	IC UHS
216	EGHV0012	ESW TO CCW TRN B UPSTRM HV	AUX	Yes	Yes	IC UHS
217	EGHV0013	ESW TO CCW TRN A DNSTRM HV	AUX	Yes	Yes	IC UHS
218	EGHV0014	ESW TO CCW TRN B DNSTRM HV	AUX	Yes	Yes	IC UHS
219	EGHV015	CCW TRAIN A RETURN ISO VALVE	AUX	Yes	Yes	RC IC DHR
220	EGHV016	CCW TRAIN B RETURN ISO VALVE	AUX	Yes	Yes	RC IC DHR
221	EGHV053	CCW TRAIN A SUPPLY ISO VALVE	AUX	Yes	Yes	RC IC DHR
222	EGHV054	CCW TRAIN B SUPPLY ISO VALVE	AUX	Yes	Yes	RC IC DHR
223	EGHV058	CCW TO RCS ISO	AUX	Yes	Yes	RC IC DHR CF
224	EGHV059	CCW RETURN FROM RCS ISO	AUX	Yes	Yes	RC IC DHR CF
225	EGHV060	CCW RETURN FOR RCS ISO	RB	Yes	Yes	RC IC DHR CF
226	EGHV061	CCW RETURN FROM RCS ISO	AUX	Yes	Yes	RC IC DHR CF
227	EGHV062	CCW RETURN FROM RCS ISO	RB	Yes	Yes	RC IC DHR CF
228	EGHV069A	CCW SUPPLY TO RADWST BLDG ISO BTTFLY VLV	AUX	Yes	Yes	RC IC DHR
229	EGHV069B	RADWST BLDG CCW RETN HDR ISO BTTFLY VLV	AUX	Yes	Yes	RC IC DHR
230	EGHV070A	CCW SUPPLY TO RADWST BLDG ISO BTTFLY VLV	AUX	Yes	Yes	RC IC DHR
231	EGHV070B	RADWST BLDG CCW RETN HDR ISO BTTFLY VLV	AUX	Yes	Yes	RC IC DHR
232	EGHV071	CCW TO RCS ISO	AUX	Yes	Yes	RC IC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location ⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support ⁽²⁾)
233	EGHV101	CCW TO RHR HX A ISO	AUX	Yes	Yes	RC IC DHR
234	EGHV102	CCW TO RHR HX B ISO	AUX	Yes	Yes	RC IC DHR
235	EGLT001	CCW SURGE TK A	AUX	Yes	Yes	DHR
236	EGLT002	CCW SURGE TK B	AUX	Yes	Yes	DHR
237	EGPT077	CCW PMPS A&C DISCH PRESS	AUX	Yes	Yes	DHR
238	EGPT078	CCW PMPS B&D DISCH PRESS	AUX	Yes	Yes	DHR
239	EGTE0031	CCW HX A OUTLET TEMP	AUX	Yes	Yes	RC IC DHR
240	EGTE0032	CCW HX B OUTLET TEMP	AUX	Yes	Yes	RC DHR
241	EGTV029	CCW HX A TEMP CV WAFER BTFFLY VLV	AUX	Yes	Yes	RC DHR
242	EGTV030	CCW HX B TEMP CV WAFER BTFFLY VLV	AUX	Yes	Yes	RC DHR
243	EHB01	REACTOR COOLANT DRAIN TANK HX	RB	Yes	Yes	IC
244	EJFCV610	RHR PUMP A MINIFLOW VALVE	AUX	Yes	Yes	DHR
245	EJFCV611	RHR PUMP B MINIFLOW VALVE	AUX	Yes	Yes	DHR
246	EJFCV618	RHR HX A BYPASS	AUX	Yes	Yes	DHR
247	EJFCV619	RHR HX B BYPASS	AUX	Yes	Yes	DHR
248	EJFIS610	RHR PMP 1A MINIFLOW CONTROL DISCHARGE	AUX	Yes	Yes	DHR
249	EJFIS611	RHR PMP PEJ01B MINIFLOW CONTROL DISCHARGE	AUX	Yes	Yes	DHR
250	EJHCV606	RHR HX A OUTLET ISO	AUX	Yes	Yes	DHR
251	EJHCV607	RHR HX B OUTLET ISO	AUX	Yes	Yes	DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
252	EJHV8701A	RCS HOT LEG 1 TO RHR PUMP A SUCTION	RB	Yes	Yes	DHR
253	EJHV8701B	RCS HOT LEG 4 TO RHR PUMP B SUCTION	RB	Yes	Yes	DHR
254	EJHV8716A	RHR A TO SIS HOT LEG RECIRC LOOPS 2 & 3 ISO	AUX	Yes	Yes	DHR
255	EJHV8716B	RHR B TO SIS HOT LEG RECIRC LOOPS 2 & 3 ISO	AUX	Yes	Yes	DHR
256	EJHV8804A	RHR A TO CVCS CCP ISO	AUX	Yes	Yes	DHR
257	EJHV8804B	RHR SUPPLY TO SI PUMP B ISO VALVE	AUX	Yes	Yes	DHR
258	EJHV8809A	RHR TO ACCUM INJ LOOPS 1 & 2 ISO VLV	AUX	Yes	Yes	DHR
259	EJHV8809B	RHR TO ACCUM INJ LOOPS 3 & 4 ISO VLV	AUX	Yes	Yes	DHR
260	EJHV8811A	CTMT RECIRC SUMP TO RHR PUMP A SUCTION	AUX	Yes	Yes	DHR
261	EJHV8811B	CTMT RECIRC SUMP TO RHR PUMP B SUCTION	AUX	Yes	Yes	DHR
262	EJHV8840	RHR/SI HOT LEG RECIRC ISO VALVE	AUX	Yes	Yes	DHR
263	EJLE007A	CTMT RECIRC SUMP LEVEL	RB	Yes	Yes	DHR CF
264	EJLE007B	CTMT RECIRC SUMP LEVEL	RB	Yes	Yes	DHR CF
265	EJLE008A	CTMT SUMP A LEVEL	RB	Yes	Yes	DHR CF
266	EJLE008B	CTMT SUMP B LEVEL	RB	Yes	Yes	DHR CF
267	EJLIT007	CTMT SUMP B LEVEL	CB/CC	Yes	Yes	DHR CF
268	EJLIT008	CTMT SUMP A LEVEL INDICATING TRANSMITTER	CB/CC	Yes	Yes	DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location ⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support ⁽²⁾)
269	EKJ03A	INTERCOOLER HEAT EXCHANGER	DGB	Yes	Yes	RC PC IC DHR CF
270	EKJ03B	INTERCOOLER HEAT EXCHANGER	DGB	Yes	Yes	RC PC IC DHR CF
271	EKJ04A	LUBE OIL COOLER	DGB	Yes	Yes	RC PC IC DHR CF
272	EKJ04B	LUBE OIL COOLER	DGB	Yes	Yes	RC PC IC DHR CF
273	EKJ06A	DIESEL JACKET WATER HEAT EXCHANGER	DGB	Yes	Yes	RC PC IC DHR CF
274	EKJ06B	DIESEL JACKET WATER HEAT EXCHANGER	DGB	Yes	Yes	RC PC IC DHR CF
275	EMFS917C	CNTFGL CHG PMPS TO BRN INJ TK	AUX	Yes	Yes	RC IC DHR
276	EMFS917D	CNTFGL CHG PMPS TO BRN INJ TK	AUX	Yes	Yes	RC IC DHR
277	EMFT0922	SI PMP B DISCH FLOW XMTR	AUX	Yes	Yes	IC DHR
278	EMFT917A	CCP A TO BIT FLOW TRANSMITTER	AUX	Yes	Yes	RC IC DHR
279	EMFT917B	CCP B TO BIT FLOW TRANSMITTER	AUX	Yes	Yes	RC IC DHR
280	EMHV8801A	BIT OUTLET ISO	AUX	Yes	Yes	RC IC DHR CF
281	EMHV8801B	BIT OUTLET ISO	AUX	Yes	Yes	RC IC DHR CF
282	EMHV8802A	SI PUMP A DISCH HOT LEG ISO VLV	AUX	Yes	Yes	RC IC DHR CF
283	EMHV8802B	SI PUMP B DIS HOT LEG ISO VLV	AUX	Yes	Yes	RC IC DHR CF
284	EMHV8803A	CHARGING PUMP DISCH HDR TO BIT ISO	AUX	Yes	Yes	RC IC DHR
285	EMHV8803B	CHARGING PUMP DISCH HDR TO BIT ISO	AUX	Yes	Yes	RC IC DHR
286	EMHV8807A	RHR HX A/CVCS TO SI PUMP A DOWNSTREAM ISO	AUX	Yes	Yes	RC IC DHR
287	EMHV8807B	RHR HX A/CVCS TO SI PUMP A DOWNSTREAM ISO	AUX	Yes	Yes	RC IC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
288	EMHV8814A	SI PUMP A RETURN TO RWST ISO VLV	AUX	Yes	Yes	RC IC DHR
289	EMHV8814B	SI PUMP B RETURN TO RWST ISO VALVE	AUX	Yes	Yes	RC IC DHR
290	EMHV8821A	SI PUMP A DISCHARGE ACCUM INJ ISO VALVE	AUX	Yes	Yes	RC IC DHR
291	EMHV8821B	SI PUMP B DISCHARGE ACCUM INJ ISO VALVE	AUX	Yes	Yes	RC IC DHR
292	EMHV8824	SAFETY INJ PUMP B TEST LINE ISO VLV	RB	Yes	Yes	IC DHR CF
293	EMHV8835	SAFETY INJ COLD LEG ISO VALVE	AUX	Yes	Yes	IC DHR CF
294	EMHV8923A	SAFETY INJECTION PUMP A SUCT ISO VALVE	AUX	Yes	Yes	IC DHR
295	EMHV8923B	SAFETY INJECTION PUMP B SUCT ISO VLV	AUX	Yes	Yes	PC IC DHR
296	EMHV8924	RHR HX A/CVCS TO SI PUMP A UPSTREAM ISO	AUX	Yes	Yes	IC DHR
297	ENHV001	CTMT RECIRC SUMP TO CTMT SPRAY PUMP A ISO	AUX	Yes	Yes	CF
298	ENHV006	CTMT SPRAY TRAIN A DISCH ISO VLV	AUX	Yes	Yes	CF
299	ENHV007	CTMT RECIRC SUMP TO CTMT SPRAY PUMP B ISO	AUX	Yes	Yes	CF
300	ENHV012	CTMT SPRAY TRAIN B DISCH ISO VLV	AUX	Yes	Yes	CF
301	ENHV016	SPRAY ADDITIVE TANK OUTLET TO CTMT SPRAY B ISO	AUX	Yes	Yes	CF
302	EPHV8808A	ACCUMULATOR TANK A OUTLET ISO VALVE	RB	Yes	Yes	DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
303	EPHV8808B	ACCUMULATOR TANK B OUTLET ISO VALVE	RB	Yes	Yes	DHR
304	EPHV8808C	ACCUMULATOR TANK C OUTLET ISO VALVE	RB	Yes	Yes	DHR
305	EPHV8808D	ACCUMULATOR TANK D OUTLET ISO VALVE	RB	Yes	Yes	DHR
306	FC219	LOCAL CONTROL PANEL FOR TD AFW PUMP	AUX	Yes	Yes	PC DHR
307	FCFV313	TDAFP GOVERNOR VALVE	AUX	Yes	Yes	PC DHR
308	FCHV312	AUX FW PUMP TURBINE MECH TRIP/THROT VLV	AUX	Yes	Yes	PC DHR
309	FEF02A	ESW SELF-CLEANING STRAINER (MTR OP.-IN MOV PROG.)	ESW	Yes	Yes	RC PC IC DHR CF
310	FEF02B	ESW SELF-CLEAN STRAIN. (MTR OP.-IN MOV PROG.)	ESW	Yes	Yes	RC PC IC DHR CF
311	FEF03A	ESSENTIAL SERVICE WATER PUMP PRE-LUBE STORAGE TK A FILTER	ESW	Yes	Yes	IC UHS
312	FEF03B	ESSENTIAL SERVICE WATER PUMP PRE-LUBE STORAGE TK B FILTER	ESW	Yes	Yes	IC UHS
313	FEN01A	CONTAINMENT RECIRCULATION SUMP SCREEN	RB	Yes	Yes	CF
314	FEN01B	CONTAINMENT RECIRCULATION SUMP SCREEN	RB	Yes	Yes	CF
315	FKJ02A	KKJ01A AIR INTAKE FILTER	DGB	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
316	FKJ02B	KKJ01A AIR INTAKE FILTER	DGB	Yes	Yes	RC PC IC DHR CF
317	FKJ02C	KKJ01B AIR INTAKE FILTER	DGB	Yes	Yes	RC PC IC DHR CF
318	FKJ02D	KKJ01B AIR INTAKE FILTER	DGB	Yes	Yes	RC PC IC DHR CF
319	GDD0001	ESW PUMP RM SUP FAN 1A INLET TORNADO DAMPER <ESW A TRAIN>	ESW	Yes	Yes	RC PC IC DHR CF
320	GDD0003	ESW PUMP RM A EXHAUST SPRING LOADED TORNADO DAMPER <ESW A TRAIN>	ESW	Yes	Yes	RC PC IC DHR CF
321	GDD0008	ESW PUMP RM SUP FAN 1B INLET TORNADO DAMPER <ESW B TRAIN>	ESW	Yes	Yes	RC PC IC DHR CF
322	GDD0010	ESW PUMP RM B EXHAUST SPRING LOADED TORNADO DAMPER <ESW B TRAIN>	ESW	Yes	Yes	RC PC IC DHR CF
323	GDTE001	ESW PMP RM TEMP 1A DM <TIME CRITICAL ACTION EQUIPMENT>	ESW	Yes	Yes	RC PC IC DHR CF
324	GDTE0051	COOL TWR ELEC RM SPLY FAN A TEMP ELEM	COOLING TOWERS	Yes	Yes	IC DHR
325	GDTE0061	COOL TWR ELEC RM SPLY FAN B TEMP ELEM	COOLING TOWERS	Yes	Yes	IC DHR
326	GDTE011	ESW PMP RM SUP FAN 1B DMPR	ESW	Yes	Yes	RC PC IC DHR CF
327	GDTSL0001	ESW PMP RM FAN CGD01A TEMP SWITCH LOW	CB	Yes	Yes	RC PC IC DHR CF
328	GDTZ001A	ACTUATOR FOR O.A. DAMPER GDD0002	ESW	Yes	Yes	IC DHR
329	GDTZ001B	ESW ACTUATOR FOR RETURN AIR DAMPER GDD0004	ESW	Yes	Yes	IC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
330	GDTZ001C	ACTUATOR FOR EXHAUST DAMPER GDD0012	ESW	Yes	Yes	IC DHR
331	GDTZ0051A	COOL TWR ELEC RM SPLY FAN A OUTSIDE AIR DMPR GDD0015 OPERATOR	COOLING TOWERS	Yes	Yes	IC DHR
332	GDTZ0051B	COOL TWR ELECT RM SPLY FAN A AIR RTN DMPR GDD0016 OPERATOR	COOLING TOWERS	Yes	Yes	IC DHR
333	GDTZ0051C	COOL TWR ELEC RM SPLY FAN A AIR EXH DMPR GDD0019 OPERATOR	COOLING TOWERS	Yes	Yes	IC DHR
334	GDTZ0061A	COOL TWR ELEC RM SPLY FAN B OUTSIDE AIR DMPR GDD0017 OPERATOR	COOLING TOWERS	Yes	Yes	IC DHR
335	GDTZ0061B	COOL TWR ELEC RM SPLY FAN B AIR RTN DMPR GDD0018 OPERATOR	COOLING TOWERS	Yes	Yes	IC DHR
336	GDTZ0061C	COOL TWR ELEC RM SPLY FAN B AIR EXH DMPR GDD0020 OPERATOR	COOLING TOWERS	Yes	Yes	IC DHR
337	GDTZ011A	ACT. FOR ESW PMP RM SUP FAN OA DMPR GDD0009	ESW	Yes	Yes	IC DHR
338	GDTZ011B	ACTUATOR FOR ESW PUMP RM SUPPLY FAN RETURN DAMPER	ESW	Yes	Yes	IC DHR
339	GDTZ011C	ACT. FOR ESW PMP RM SP FAN EXH DMPR GDD0013	ESW	Yes	Yes	IC DHR
340	GKHZ0019D	CTRL RM AIR COND UNIT A DISCH TO HVAC EQUIP RM DMPR OPER	AUX	Yes	Yes	RC PC IC DHR CF
341	GKHZ029A	CONT ROOM A/C UNIT A RETURN DAMPER	AUX	Yes	Yes	RC PC IC DHR CF
342	GKHZ029B	CONT ROOM A/C UNIT A DISCHARGE DAMPER	AUX	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
343	GKHZ030D	CTRL RM FLTR FAN 4B DISCH ACTUATOR (D0318)	CB	Yes	Yes	RC PC IC DHR CF
344	GKHZ040A	CONT ROOM A/C UNIT B RETURN DAMPER	AUX	Yes	Yes	RC PC IC DHR CF
345	GKHZ040B	CONT ROOM A/C UNIT A DISCHARGE DAMPER	AUX	Yes	Yes	RC PC IC DHR CF
346	GKV765	SGK04A WATER REGULATING VALVE	CB	Yes	Yes	RC PC IC DHR CF
347	GKV766	SGK04B WATER REGULATING VALVE	CB	Yes	Yes	RC PC IC DHR CF
348	GKV767	SGK05A WATER REGULATING VALVE	CB	Yes	Yes	RC PC IC DHR CF
349	GKV768	SGK05B WATER REGULATING VALVE	CB	Yes	Yes	RC PC IC DHR CF
350	GMD0001	DG VENT SPLY FAN A SUCT OUT AIR BACKDRAFT DMPR	DGB	Yes	Yes	RC PC IC DHR CF
351	GMHZ009	DSL GEN RM EXH DMPR A, GMD0005	DGB	Yes	Yes	RC PC IC DHR CF
352	GMHZ019	DSL GEN RM EXH DMPR B, GMD0010	DGB	Yes	Yes	RC PC IC DHR CF
353	GMTE001	DIESEL GEN VENT SUPPLY FAN 1A	DGB	Yes	Yes	RC PC IC DHR CF
354	GMTE011	DIESEL GEN VENT SUPPLY FAN 1B	DGB	Yes	Yes	RC PC IC DHR CF
355	GMTZ001A	ACT FOR DG VENT SUPPLY FAN DAMPER GMD0002	DGB	Yes	Yes	RC PC IC DHR CF
356	GMTZ001B	ACT FOR DG VENT SUPPLY FAN DAMPER GMD0007	DGB	Yes	Yes	RC PC IC DHR CF
357	GMTZ011A	ACT FOR DG VENT SUPPLY FAN DAMPER GMD0002	DGB	Yes	Yes	RC PC IC DHR CF
358	GMTZ011B	ACT FOR DG VENT SUPPLY FAN DAMPER GMD0007	DGB	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC 1 Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
359	GNPT934	CONTAINMENT ATMOSPHERE	AUX	Yes	Yes	CF
360	GNPT935	CONTAINMENT ATMOSPHERE	AUX	Yes	Yes	CF
361	GNPT936	CONTAINMENT ATMOSPHERE	AUX	Yes	Yes	CF
362	GNPT937	CONTAINMENT ATMOSPHERE	AUX	Yes	Yes	CF
363	GNPT938	CONTAINMENT ATMOSPHERE	AUX	Yes	Yes	CF
364	GNPT939	CONTAINMENT ATMOSPHERE	AUX	Yes	Yes	CF
365	GNTE060	CTMT COOLER A INLET TEMP ELEMENT	RB	Yes	Yes	CF
366	GNTE061	CTMT COOLER D INLET TEMP ELEMENT	RB	Yes	Yes	CF
367	GNTE062	CTMT COOLER C INLET TEMP ELEMENT	RB	Yes	Yes	CF
368	GNTE063	CTMT COOLER B INLET TEMP ELEMENT	RB	Yes	Yes	CF
369	GSHV0020	H2 PURGE INNER CTMT ISO BUTTFLY VLV	RB	Yes	Yes	CF
370	GSHV0021	H2 PURGE OUTER CTMT ISO BUTT VLV	AUX	Yes	Yes	CF
371	GSHV031	CTMT ATMOS MON (RE-32) SUPPLY INSIDE CTMT ISO	RB	Yes	Yes	CF
372	GSHV032	CTMT ATMOSPHERE MONITOR SUPPLY OUTER ISO	AUX	Yes	Yes	CF
373	GSHV033	CTMT ATMOS MON (RE-32) SUPPLY OUTSIDE CTMT ISO	AUX	Yes	Yes	CF
374	GSHV034	CTMT ATMOS MONITOR (RE-32) RET INSIDE CTMT ISO	RB	Yes	Yes	CF
375	GSHV036	CTMT ATM MONIT (RE-31) SUPPLY OUTSIDE CTMT ISO	RB	Yes	Yes	CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC 1 Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
376	GSHV037	CTMT ATMOSPHERE MONITOR SUPPLY INSIDE ISO	AUX	Yes	Yes	CF
377	GSHV038	CTMT ATM MON (RE-31) RET-CTMT OUTSIDE ISO	AUX	Yes	Yes	CF
378	GSHV039	CTMT ATMOS MONITOR (RE-31) RETURN TO CTMT INSIDE ISO	RB	Yes	Yes	CF
379	GTHZ004	CTMT MINI PURGE AIR SUPPLY O/SIDE CTMT ISO BTTFLY VLV	AUX	Yes	Yes	CF
380	GTHZ005	CTMT MINI PURGE AIR SUPPLY I/S CTMT ISO BTTFLY VLV	RB	Yes	Yes	CF
381	GTHZ006	CTMT MINI PURGE AIR SUPPLY O/SIDE CTMT ISO BTTFLY VLV	AUX	Yes	Yes	CF
382	GTHZ007	CTMT SD PURGE SUPPLY INSIDE CTMT ISO BTTFLY VLV	RB	Yes	Yes	CF
383	GTHZ008	CTMT SD PURGE EXCH INSIDE CTMT ISO BTTFLY VLV	RB	Yes	Yes	CF
384	GTHZ009	CTMT MINI PURGE EXH OUTSIDE CTMT ISO	AUX	Yes	Yes	CF
385	GTHZ011	CTMT MINI PURGE EXH INSIDE CTMT ISO BTTFLY VLV	RB	Yes	Yes	CF
386	GTHZ012	CTMT MINI PURGE EXH OUTSIDE CTMT ISO BTTFLY VLV	AUX	Yes	Yes	CF
387	GTRE0031	CTMT ATMOSPHERE RADIATION MONITOR	AUX	Yes	Yes	CF
388	GTRE0032	CTMT ATMOSPHERE RADIATION MONITOR	AUX	Yes	Yes	CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location ⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support ⁽²⁾)
389	GTRT031	CTMT ATMOSHERE RADIATION MONITOR (2)	AUX	Yes	Yes	CF
390	GTRT032	CTMT ATMOSHERE RADIATION MONITOR (1)	AUX	Yes	Yes	CF
391	HBHV7176	RCDT PUMPS DISCH HDR INSIDE CTMT ISO	RB	Yes	Yes	CF
392	JELT0001	EMERG F/O DAY TK A LEV XMTR	DGB	Yes	Yes	RC PC IC DHR CF
393	JELT012	TJE02A LEVEL TRANSMITTER	DGB	Yes	Yes	RC PC IC DHR CF
394	JELT021	EMER FUEL OIL DAY TK B LEV	DGB	Yes	Yes	RC PC IC DHR CF
395	JELT032	TJE02B LEVEL TRANSMITTER	DGB	Yes	Yes	RC PC IC DHR CF
396	KAPCV101	TKA03 OUTLET PRESSURE CONTROL VALVE	AUX	Yes	Yes	DHR
397	KAPCV102	TKA04 OUTLET PRESSURE CONTROL VALVE	AUX	Yes	Yes	DHR
398	KAPCV103	TKA05 OUTLET PRESSURE CONTROL VALVE	AUX	Yes	Yes	DHR
399	KAPCV200	TKA02 OUTLET PRESSURE CONTROL VALVE	AUX	Yes	Yes	DHR
400	KJ121	GAUGE PANEL	DG	Yes	Yes	RC PC IC DHR CF
401	KJ122	GAUGE PANEL	DG	Yes	Yes	RC PC IC DHR CF
402	KJHV001	ESW A TO STARTING AIR CMPSR AFTERCOOLERS 5A/B ISO	DGB	Yes	Yes	DHR
403	KJHV002	STARTING AIR CMPSR AFTERCOOLERS 5A/B ESW A RETURN ISO	DGB	Yes	Yes	DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
404	KJHV101	ESW B TO STARTING AIR CMPSR AFTERCOOLERS 5C/D ISO	DGB	Yes	Yes	DHR
405	KJHV102	STARTING AIR CMPSR AFTERCOOLERS 5C/D ESW B RETURN ISO	DGB	Yes	Yes	DHR
406	KKJ01A	STANDBY DIESEL (GENERATOR)	DGB	Yes	Yes	RC PC IC DHR CF
407	KKJ01B	STANDBY DIESEL (GENERATOR)	DGB	Yes	Yes	RC PC IC DHR CF
408	LFFV0095	CTMT NOR SUMPS TO FLOOR DRN TK INSIDE CTMT ISO	RB	Yes	Yes	CF
409	LFFV0096	CTMT NOR SUMPS TO FLR DRN TK OUTSIDE CTMT ISO	AUX	Yes	Yes	CF
410	NB00211	EMG D/G SUPPLY FDR BRKR	CB	Yes	Yes	RC PC IC DHR CF
411	NB00213	CTRL BLDG LC NG02 SWGR BRKR	CB	Yes	Yes	RC PC IC DHR CF
412	NB00215	ESW PUMP DPEF01B SWGR BRKR	CB	Yes	Yes	RC PC IC DHR CF
413	NB01	4.16 KV BUS	CB/CC	Yes	Yes	RC PC IC DHR CF
414	NB0110	CTRL BLDG LC NG03	CB	Yes	Yes	RC PC IC DHR CF
415	NB0112	FDR XFMR XNB01	CB	Yes	Yes	RC PC IC DHR CF
416	NB0113	CTRL BLDG LC NG01	CB	Yes	Yes	RC PC IC DHR CF
417	NB02	4.16 KV BUS #2	CB	Yes	Yes	RC PC IC DHR CF
418	NB0209	FDR XFMR XNB02	CB	Yes	Yes	RC PC IC DHR CF
419	NB0210	CTRL BLDG LC NG04	CB	Yes	Yes	RC PC IC DHR CF
420	NE01	STANDBY #1	DGB	Yes	Yes	RC PC IC DHR CF
421	NE02	STANDBY #2	DGB	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
422	NE03	DG 'A' NEUTRAL GROUNDING RESISTOR	DGB	Yes	Yes	RC PC IC DHR CF
423	NE04	DG 'B' NEUTRAL GROUNDING RESISTOR	DGB	Yes	Yes	RC PC IC DHR CF
424	NE106	CONT STBY GEN (NE02) RELAY	DGB	Yes	Yes	RC PC IC DHR CF
425	NE107	CONT STBY GEN (NE01) RELAY	DGB	Yes	Yes	RC PC IC DHR CF
426	NF039A	CONT SHED/SEQ CH 1 LOGIC	CB/CC	Yes	Yes	RC PC IC DHR CF
427	NF039B	CONT SHED/SEQ CH 4 LOGIC	CB/CC	Yes	Yes	RC PC IC DHR CF
428	NF039C	CONTROL PANEL SHED/SEQ CH 1 & 4 TERM	CB/CC	Yes	Yes	RC PC IC DHR CF
429	NG01	480 VAC	CB/CC	Yes	Yes	RC PC IC DHR CF
430	NG0101	NG01 FDR BRKR	CB	Yes	Yes	RC PC IC DHR CF
431	NG0106	NG01A FDR BRKR	CB	Yes	Yes	RC PC IC DHR CF
432	NG01A	480 VAC	CB/CC	Yes	Yes	RC PC IC DHR CF
433	NG01B	480 VAC MOTOR CONTROL CENTER	AUX	Yes	Yes	RC PC IC DHR CF
434	NG01T	480 VAC MOTOR CONTROL CENTER	AUX	Yes	Yes	RC PC IC DHR CF
435	NG02	480 VAC	CB/CC	Yes	Yes	RC PC IC DHR CF
436	NG0201	MAIN BREAKER	CB	Yes	Yes	RC PC IC DHR CF
437	NG02A	480 VAC	CB/CC	Yes	Yes	RC PC IC DHR CF
438	NG02B	480 VAC MOTOR CONTROL CENTER	AUX	Yes	Yes	RC PC IC DHR CF
439	NG02T	480 VAC MOTOR CONTROL CENTER	AUX	Yes	Yes	RC PC IC DHR CF
440	NG03	480 VAC	CB/CC	Yes	Yes	RC PC IC DHR CF
441	NG0301	CB FEED TO - NG03 - FEEDER FROM NB0110	CB/CC	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
442	NG03C	480 VAC	AUX	Yes	Yes	RC PC IC DHR CF
443	NG03D	480 VAC	DGB	Yes	Yes	RC PC IC DHR CF
444	NG03T	480 VAC MOTOR CONTROL CENTER	AUX	Yes	Yes	RC PC IC DHR CF
445	NG04	480 VAC	CB/CC	Yes	Yes	RC PC IC DHR CF
446	NG0401	NG04 FDR BRKR	CB	Yes	Yes	RC PC IC DHR CF
447	NG04C	480 VAC	AUX	Yes	Yes	RC PC IC DHR CF
448	NG04D	480 VAC	DGB	Yes	Yes	RC PC IC DHR CF
449	NG04T	480 VAC MOTOR CONTROL CENTER	AUX	Yes	Yes	RC PC IC DHR CF
450	NG05E	480 VAC	ESW	Yes	Yes	RC PC IC DHR CF
451	NG06E	480 VAC	ESW	Yes	Yes	RC PC IC DHR CF
452	NG07	LC 480 VAC	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
453	NG07F	MCC 480 VAC	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
454	NG08	LC 480 VAC	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
455	NG08F	MCC 480 VAC	ULTIMATE HEAT SINK	Yes	Yes	IC DHR
456	NK01	125 VDC BUS SWITCHBOARD	CB/CC	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
457	NK02	125 VDC BUS SWITCHBOARD	CB/CC	Yes	Yes	RC PC IC DHR CF
458	NK03	125 VDC BUS SWITCHBOARD	CB/CC	Yes	Yes	RC PC IC DHR CF
459	NK04	125 VDC BUS SWITCHBOARD	CB/CC	Yes	Yes	RC PC IC DHR CF
460	NK11	125-VDC NO.1 60-CELL BATTERY	CB/CC	Yes	Yes	RC PC IC DHR CF
461	NK12	125-VDC NO.2 60-CELL BATTERY	CB/CC	Yes	Yes	RC PC IC DHR CF
462	NK13	125-VDC NO.3 60-CELL BATTERY	CB/CC	Yes	Yes	RC PC IC DHR CF
463	NK14	125-VDC NO.4 60-CELL BATTERY	CB/CC	Yes	Yes	RC PC IC DHR CF
464	NK21	125 VDC NO 1	CB/CC	Yes	Yes	RC PC IC DHR CF
465	NK22	125 VDC NO 2	CB/CC	Yes	Yes	RC PC IC DHR CF
466	NK23	125 VDC NO 3	CB/CC	Yes	Yes	RC PC IC DHR CF
467	NK24	125 VDC NO 4	CB/CC	Yes	Yes	RC PC IC DHR CF
468	NK41	DIST 125 VDC	CB/CC	Yes	Yes	RC PC IC DHR CF
469	NK42	DIST 125 VDC	CB/CC	Yes	Yes	RC PC IC DHR CF
470	NK43	DIST 125 VDC	CB/CC	Yes	Yes	RC PC IC DHR CF
471	NK44	DIST 125 VDC	CB/CC	Yes	Yes	RC PC IC DHR CF
472	NK51	DIST 125 VDC	CB/CC	Yes	Yes	RC PC IC DHR CF
473	NK54	DIST 125 VDC	CB/CC	Yes	Yes	RC PC IC DHR CF
474	NN01	DIST 120 VAC INSTR	CB/CC	Yes	Yes	RC PC IC DHR CF
475	NN02	DIST 120 VAC INSTR	CB/CC	Yes	Yes	RC PC IC DHR CF
476	NN03	DIST 120 VAC INSTR	CB/CC	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
477	NN04	DIST 120 VAC INSTR	CB/CC	Yes	Yes	RC PC IC DHR CF
478	NN11	7.5 KVA	CB/CC	Yes	Yes	RC PC IC DHR CF
479	NN12	7.5 KVA	CB/CC	Yes	Yes	RC PC IC DHR CF
480	NN13	7.5 KVA	CB/CC	Yes	Yes	RC PC IC DHR CF
481	NN14	7.5 KVA	CB/CC	Yes	Yes	RC PC IC DHR CF
482	PAL01A	AUX FEEDWATER PUMP	AUX	Yes	Yes	PC DHR
483	PAL01B	AUX FEEDWATER PUMP	AUX	Yes	Yes	PC DHR
484	PAL02	AFW PUMP-TURBINE DRIVEN	AUX	Yes	Yes	PC DHR
485	PBG04	NORMAL CHARGING CCP	AUX	Yes	Yes	RC PC IC
486	PBG05A	CENTRIFUGAL CHARGING PUMP	AUX	Yes	Yes	RC PC IC DHR
487	PBG05B	CENTRIFUGAL CHARGING PUMP	AUX	Yes	Yes	RC PC IC DHR
488	PEF01A	ESSENTIAL SERV. WATER PUMP	ESW	Yes	Yes	RC PC IC DHR CF
489	PEF01B	ESSENTIAL SERV. WATER PUMP	ESW	Yes	Yes	RC PC IC DHR CF
490	PEG01A	COMPONENT COOL. WATER PUMP	AUX	Yes	Yes	RC PC IC DHR CF
491	PEG01B	COMPONENT COOL. WATER PUMP	AUX	Yes	Yes	RC PC IC DHR CF
492	PEG01C	COMPONENT COOL. WATER PUMP	AUX	Yes	Yes	RC PC IC DHR CF
493	PEG01D	COMPONENT COOL. WATER PUMP	AUX	Yes	Yes	RC PC IC DHR CF
494	PEJ01A	RESIDUAL HEAT REMOVAL PUMP	AUX	Yes	Yes	IC DHR
495	PEJ01B	RESIDUAL HEAT REMOVAL PUMP	AUX	Yes	Yes	IC DHR
496	PEM01A	SAFETY INJ. PUMP	AUX	Yes	Yes	IC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
497	PEM01B	SAFETY INJ. PUMP	AUX	Yes	Yes	IC DHR
498	PEN01A	CONTAINMENT SPRAY PUMP A	AUX	Yes	Yes	CF
499	PEN01B	CONTAINMENT SPRAY PUMP B	AUX	Yes	Yes	CF
500	PJE01A	EMERGENCY FUEL OIL TRANSFER PUMP	YRD	Yes	Yes	RC PC IC DHR CF
501	PJE01B	EMERGENCY FUEL OIL TRANSFER PUMP	YRD	Yes	Yes	RC PC IC DHR CF
502	RL001	REACTOR COOLANT AND SUPT SYS CONSOLE	CB	Yes	Yes	RC PC IC DHR CF
503	RL002	REACTOR COOLANT AND SUPT SYS CONSOLE	CB	Yes	Yes	RC PC IC DHR
504	RL003	REACTOR OPERATOR'S CONSOLE	CB	Yes	Yes	RC PC IC DHR
505	RL004	REACTOR OPERATOR'S CONSOLE	CB	Yes	Yes	RC PC IC DHR
506	RL005	TURBOGENERATOR AND FW CONSOLE	CB	Yes	Yes	PC IC DHR
507	RL006	TURBOGENERATOR AND FW CONSOLE	CB	Yes	Yes	RC PC IC DHR
508	RL013	SITE-RELATED SECTION MCB	CB	Yes	Yes	RC PC IC DHR CF
509	RL014	SITE-RELATED SECTION MCB	CB	Yes	Yes	RC PC IC DHR CF
510	RL015	STATION ELECTRICAL DIST MCB	CB	Yes	Yes	RC PC IC DHR CF
511	RL016	STATION ELECTRICAL DIST MCB	CB	Yes	Yes	RC PC IC DHR CF
512	RL017	ESF MCB	CB	Yes	Yes	RC PC IC DHR CF
513	RL018	ESF MCB	CB	Yes	Yes	RC PC IC DHR CF
514	RL019	ESF MCB	CB	Yes	Yes	RC PC IC DHR CF
515	RL020	ESF MCB	CB	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location ⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support ⁽²⁾)
516	RL021	REACTOR AUXILIARIES PANEL	CB	Yes	Yes	RC PC IC DHR CF
517	RL022	REACTOR AUXILIARIES PANEL	CB	Yes	Yes	RC IC DHR CF
518	RL025	TURBOGENERATOR AND FW MCB	CB	Yes	Yes	PC DHR
519	RP068	MISC BOP PANEL	CB	Yes	Yes	RC PC IC DHR
520	RP080	RPV LEVEL INSTR SYS PROC PROT SYS	CB	Yes	Yes	IC
521	RP081A	SUBCOOLING MONITORING CABINET	CB	Yes	Yes	DHR
522	RP081B	T/C SUBCOOLING MONITOR CABINET	CB	Yes	Yes	DHR
523	RP118A	AUX SHUTDOWN PANEL	AUX	Yes	Yes	RC PC IC DHR CF
524	RP118B	AUX SHUTDOWN PANEL	AUX	Yes	Yes	RC PC IC DHR CF
525	RP139	B AUXILIARY RELAY	CB	Yes	Yes	RC PC IC DHR CF
526	RP140	B AUXILIARY RELAY	CB	Yes	Yes	RC PC IC DHR CF
527	RP289	DC DISTRIBUTION	AUX	Yes	Yes	PC IC DHR CF
528	RP315	125V DC DIST PANEL	ESW	Yes	Yes	PC DHR CF
529	RP316	125V DC DIST PANEL	ESW	Yes	Yes	PC DHR CF
530	SA036A	ESFAS CH1 TERM	CB/CC	Yes	Yes	RC PC IC DHR CF
531	SA036B	ESFAS CH4 TERM	CB/CC	Yes	Yes	RC PC IC DHR CF
532	SA036C	ESFAS CH2 LOGIC/TERM CABINET	CB/CC	Yes	Yes	RC PC IC DHR CF
533	SA036D	ESFAS CH1 LOGIC CABINET	CB/CC	Yes	Yes	RC PC IC DHR CF
534	SA036E	ESFAS CH4 LOGIC CABINET	CB/CC	Yes	Yes	RC PC IC DHR CF
535	SA075A	CONT MN STM & FW ISO ACT	CB/CC	Yes	Yes	DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
536	SA075B	CONT MN STM & FW ISO ACT	CB/CC	Yes	Yes	DHR
537	SB029A	W SS PROT SYS INPUT TRN	CB/CC	Yes	Yes	RC PC IC DHR CF
538	SB029B	W SS PROT SYS LOGIC TRN	CB/CC	Yes	Yes	RC PC IC DHR CF
539	SB029C	W SS PROT SYS OUT 1 TRN	CB/CC	Yes	Yes	RC PC IC DHR CF
540	SB029D	W SS PROT SYS OUT 2 TRN	CB/CC	Yes	Yes	RC PC IC DHR CF
541	SB032A	W SS PROT SYS INPUT TRN	CB/CC	Yes	Yes	RC PC IC DHR CF
542	SB032B	W SS PROT SYS LOGIC TRN	CB/CC	Yes	Yes	RC PC IC DHR CF
543	SB032C	W SS PROT SYS OUT 1 TRN	CB/CC	Yes	Yes	RC PC IC DHR CF
544	SB032D	W SS PROT SYS OUT 2 TRN	CB/CC	Yes	Yes	RC PC IC DHR CF
545	SB037	W PROCESS ANALOG PROTECTION SET CAB-03	CB/CC	Yes	Yes	RC PC IC DHR CF
546	SB038	W PROCESS ANALOG PROTECTION SET CAB-01	CB/CC	Yes	Yes	RC PC IC DHR CF
547	SB041	W PROCESS ANALOG PROTECTION SET CAB-04	CB/CC	Yes	Yes	RC PC IC DHR CF
548	SB042	W PROCESS ANALOG PROTECTION SET CAB-02	CB/CC	Yes	Yes	RC PC IC DHR CF
549	SB078	RPV LEVEL INSTR SYS PROC PROT SYS	CB	Yes	Yes	IC
550	SB079	RPV LEVEL INSTR SYS PROC PROT SYS	CB	Yes	Yes	IC
551	SB102A	W CABINET FOR REACTOR TRIP SWG TRAIN-A	AUX	Yes	Yes	RC

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
552	SB102B	W CABINET FOR REACTOR TRIP SWG TRAIN-B	AUX	Yes	Yes	RC
553	SE054A	W NUC INSTM NIS 1	CB/CC	Yes	Yes	RC
554	SE054B	W NUC INSTM NIS 2	CB/CC	Yes	Yes	RC
555	SE054C	W NUC INSTM NIS 3	CB/CC	Yes	Yes	RC
556	SE054D	W NUC INSTM NIS 4	CB/CC	Yes	Yes	RC
557	SE31	SOURCE RANGE CHANNEL 1 PREAMP	AUX	Yes	Yes	RC
558	SE32	SOURCE RANGE CHANNEL 2 PREAMP	AUX	Yes	Yes	RC
559	SENE031	SOURCE RANGE NUCLEAR INSTRUMENT	RB	Yes	Yes	RC
560	SENE032	SOURCE RANGE NUCLEAR INSTRUMENT	RB	Yes	Yes	RC
561	SENE035	INTERMEDIATE RANGE NUCLEAR INSTRUMENT	RB	Yes	Yes	RC
562	SENE036	INTERMEDIATE RANGE NUCLEAR INSTRUMENT	RB	Yes	Yes	RC
563	SENE060	EXCORE NEUTRON DETECTOR	RB	Yes	Yes	RC
564	SENE061	EXCORE NEUTRON DETECTOR	RB	Yes	Yes	RC
565	SENY031AB	PREAMP SR CHAN 1	AUX	Yes	Yes	RC
566	SENY032AB	PREAMP SR CHAN 2	AUX	Yes	Yes	RC
567	SENY060A	EXCORE NEUTRON DETECTOR AMPLIFIER	AUX	Yes	Yes	RC
568	SENY060B	PROCESSOR	AUX	Yes	Yes	RC
569	SENY061A	EXCORE NEUTRON DETECTOR AMPLIFIER	AUX	Yes	Yes	RC

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
570	SENY061B	PROCESSOR	AUX	Yes	Yes	RC
571	SGF02A	AUX FW PUMP ROOMCOOLER	AUX	Yes	Yes	PC DHR
572	SGF02B	AUX FW PUMP ROOMCOOLER	AUX	Yes	Yes	PC DHR
573	SGK04A	CONTROL ROOM A/C UNITS	AUX	Yes	Yes	RC PC IC DHR CF
574	SGK04B	CONTROL ROOM A/C UNITS	AUX	Yes	Yes	RC PC IC DHR CF
575	SGK05A	CLASS IE ELEC. EQUIP. A/C UNIT	CB/CC	Yes	Yes	RC PC IC DHR CF
576	SGK05B	CLASS IE ELEC. EQUIP. A/C UNIT	CB/CC	Yes	Yes	RC PC IC DHR CF
577	SGL09A	SAFETY INJECTION PUMP ROOM COOLER	AUX	Yes	Yes	IC DHR
578	SGL09B	ROOM COOLER FOR PEM01B	AUX	Yes	Yes	RC IC DHR
579	SGL10A	RHR PUMP ROOM COOLER	AUX	Yes	Yes	IC DHR
580	SGL10B	RHR PUMP ROOM COOLER	AUX	Yes	Yes	IC DHR
581	SGL11A	CCW PUMP A ROOM COOLER	AUX	Yes	Yes	RC PC IC DHR CF
582	SGL11B	CCW PUMP B ROOM COOLER	AUX	Yes	Yes	RC PC IC DHR CF
583	SGL12A	ROOM COOLER FOR PBG05A	AUX	Yes	Yes	RC IC
584	SGL12B	ROOM COOLER FOR PBG05B	AUX	Yes	Yes	RC IC
585	SGL13A	CTMT SPRAY PUMP ROOM COOLER	AUX	Yes	Yes	CF
586	SGL13B	CTMT SPRAY PUMP ROOM COOLER	AUX	Yes	Yes	CF
587	SGL15A	PENETRATION ROOMCOOLER	AUX	Yes	Yes	CF
588	SGL15B	PENETRATION ROOM COOLER	AUX	Yes	Yes	CF
589	SGN01A	CONTAINMENT COOLER	RB	Yes	Yes	CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location ⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support ⁽²⁾)
590	SGN01B	CONTAINMENT COOLER	RB	Yes	Yes	CF
591	SGN01C	CONTAINMENT COOLER	RB	Yes	Yes	CF
592	SGN01D	CONTAINMENT COOLER	RB	Yes	Yes	CF
593	SKJ02A	D/G A EXHAUST SILENCER	DGB	Yes	Yes	RC PC IC DHR CF
594	SKJ02B	D/G B EXHAUST SILENCER	DGB	Yes	Yes	RC PC IC DHR CF
595	TEF01A	ESSENTIAL SERVICE WATER PUMP PRE-LUBE STORAGE TANK A	ESW	Yes	Yes	IC UHS
596	TEF01B	ESSENTIAL SERVICE WATER PUMP PRE-LUBE STORAGE TANK B	ESW	Yes	Yes	IC UHS
597	TEG01A	CCW SURGE TANK A	AUX	Yes	Yes	RC PC IC DHR CF
598	TEG01B	CCW SURGE TANK B	AUX	Yes	Yes	RC PC IC DHR CF
599	TEM01	BORON INJECTION TANK	AUX	Yes	Yes	RC IC
600	TJE01A	EMERGENCY FUEL OIL TANK	YRD	Yes	Yes	RC PC IC DHR CF
601	TJE01B	EMERGENCY FUEL OIL TANK	YRD	Yes	Yes	RC PC IC DHR CF
602	TJE02A	EMERGENCY FUEL OIL DAY TANK	DGB	Yes	Yes	RC PC IC DHR CF
603	TJE02B	EMERGENCY FUEL OIL DAY TANK	DGB	Yes	Yes	RC PC IC DHR CF
604	TKA02	AFW CTRL/MAIN STEAM ARV ACCUM	AUX	Yes	Yes	PC DHR
605	TKA03	AFW CTRL/MAIN STEAM ARV ACCUM	AUX	Yes	Yes	PC DHR
606	TKA04	AFW CTRL/MAIN STEAM ARV ACCUM	AUX	Yes	Yes	PC DHR
607	TKA05	AFW CTRL/MAIN STEAM ARV ACCUM	AUX	Yes	Yes	PC DHR
608	TKJ01A	D/G A JACKET WATER EXPANSION TANK	DGB	Yes	Yes	RC PC IC DHR CF

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
609	TKJ01B	D/G B JACKET WATER EXPANSION TANK	DGB	Yes	Yes	RC PC IC DHR CF
610	TKJ02A	START AIR TANK D/G	DG	Yes	Yes	RC PC IC DHR CF
611	TKJ02B	START AIR TANK D/G	DG	Yes	Yes	RC PC IC DHR CF
612	TKJ02C	START AIR TANK D/G	DG	Yes	Yes	RC PC IC DHR CF
613	TKJ02D	START AIR TANK D/G	DG	Yes	Yes	RC PC IC DHR CF
614	TKJ04A	D/G A AUX LUBE OIL TANK	DGB	Yes	Yes	RC PC IC DHR CF
615	TKJ04B	D/G B AUX LUBE OIL TANK	DGB	Yes	Yes	RC PC IC DHR CF
616	XNG01	CLASS 1E LOAD CENTER TRANSFORMER	CB/CC	Yes	Yes	RC PC IC DHR CF
617	XNG02	CLASS 1E LOAD CENTER TRANSFORMER	CB/CC	Yes	Yes	RC PC IC DHR CF
618	XNG03	CLASS 1E LOAD CENTER TRANSFORMER	CB/CC	Yes	Yes	RC PC IC DHR CF
619	XNG04	CLASS 1E LOAD CENTER TRANSFORMER	CB/CC	Yes	Yes	RC PC IC DHR CF
620	XNG05	FEED MCC NG05E	ESW	Yes	Yes	IC DHR
621	XNG06	FEEDS MCC NG06E	ESW	Yes	Yes	IC DHR
622	XNG07	480/120 INSTRUMENT TRANSFORMER	CB/CC	Yes	Yes	IC DHR
623	XNG08	480/120-V INSTRUMENT XFMR FED FROM MCC NG001A	CB	Yes	Yes	IC DHR
624	XPN07A	120 V INSTRUMENT AC TRANSFORMER	CB/CC	Yes	Yes	RC IC DHR
625	XPN07B	120 V INSTRUMENT AC TRANSFORMER	CB/CC	Yes	Yes	RC IC DHR
626	XPN07C	120 V INSTRUMENT AC TRANSFORMER	CB/CC	Yes	Yes	RC IC DHR

Callaway Base List 1 (cont.)						
Base List 1 Item Number	Equipment ID	Description	Equipment Location⁽¹⁾	Screen No. 1 (SC I Licensing Basis?)	Screen No. 2 (Screens In?)	Screen No. 3 (Safety Function Support⁽²⁾)
627	XPN08A	120 V INSTRUMENT AC TRANSFORMER	CB/CC	Yes	Yes	IC DHR
628	XPN08B	120 V INSTRUMENT AC TRANSFORMER	CB/CC	Yes	Yes	IC DHR
629	XPN08C	120 V INSTRUMENT AC TRANSFORMER	CB/CC	Yes	Yes	IC DHR

Notes:

1. Location codes: Auxiliary Building (AUX), Control Building (CB), Communication Corridor (CC), Diesel Generator Building (DGB), Reactor Building (RB), Essential Service Water Pumphouse (ESW), Yard (YRD).
2. RC= Reactivity Control, PC= Reactor Coolant Pressure Control, IC = Reactor Coolant Inventory Control, DHR = Decay Heat Removal, UHS = Ultimate Heat Sink, and CF = Containment Function.

APPENDIX F
SWEL 1

Callaway SWEL 1										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
1	ABHV0014	LOOP-1 MAIN STEAM ISOLATION VALVE	POV (7)	AB	X	Hot/dry			Other	Actuator replacement
2	ABPT001	STM GEN A STEAMLINE PRESSURE	Inst. Racks (18)	AB		Mild/dry			A	
3	ABPV001	SG A ATMOSPHERIC RELIEF VLV	POV (7)	AB	X	Hot/dry			A	Controller moved
4	AEFV039	EBB01A FEEDWATER ISOLATION VALVE	POV (7)	AE	X	Hot/dry			Other	Valve operator and controls replacement
5	AELT0501	STM GEN A WIDE RANGE	Inst. Racks (18)	AE		Hot/humid			A	
6	AELT518	STM GEN LEVEL A NARROW RANGE	Inst. Racks (18)	AE		Hot/humid			A	
7	ALHV031	ESW TO MDAFW PUMP A 6" BTFL VLV W/LIMITQ	VALVE (8)	AL		Hot/humid			A	
8	BBLIS1312	RV SUBCOOLING MONITOR TRN A	Inst. Racks (18)	BB		Mild/dry			A	
9	BBPT455	PRESSURIZER PRESSURE	Inst. Racks (18)	BB		Hot/humid			A	
10	BGFCV0121	CENTRIFUGAL CHG PMP FLOW CONTROL	POV (7)	BG		Hot/dry		2.21	Other	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
11	BGFCV0124	CVCS NCP DISCH HDR FCV	POV (7)	BG		Hot/dry			Other	
12	BGHV8106	CHARGING PUMPS TO REGENERATIVE HX ISO	MOV (8)	BG		Mild/dry			A	
13	BGHV8152	LETDOWN SYSTEM CONTAINMENT ISO VLV	POV (7)	BG		Mild/dry			B	
14	BLHV8047	REACTOR M/U WATER CONTAINMENT ISO	POV (7)	BL		Mild/dry			B	
15	BMHV001	SG A BLOWDOWN AFAS ISO	POV (7)	BM		Hot/dry		1.1	A	
16	BNHV004	RWST SUPPLY TO CTMT SPRAY PUMP A	MOV (8)	BN		Hot/dry			A	
17	BNLT930	RWST LEVEL TRANSMITTER (1)	Inst. Racks (18)	BN		Hot/humid			A	
18	CEF01A	ESW ULTIMATE HEAT SINK COOLING TOWER FAN A	Fan (9)	EF		Hot/dry			A	
19	CGN03A	CONTAINMENT HYDROGEN MIXING FAN	Fan (9)	GN	X	Hot/humid			A	Motor terminal box replaced with larger-size terminal box (CARS #201004800).

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
20	EEG01A	COMPONENT COOL WATER HEAT EXCHANGER	Heat Exchangers (21)	EG	X	Mild/dry	X		A	Head replacement post-IPEEE (CARS #200906211). IPEEE Vulnerability Enhancement (resolution in IPEEE subsection 3.1.4.5.3 HCLFP Calculation): An HCLPF calculation was performed with a result of 0.41g to show adequate seismic margin.
21	EEJ01A	RESIDUAL HEAT REMOVAL HEAT EXCHANGER	Heat Exchangers (21)	EJ		Mild/dry			A	
22	EF155	ESW CONTROL PANEL	Control Panel (20)	EF		Hot/dry			A	
23	EFHV037	ESW A TO UNTIMATE HEAT SINK THROTTLED	MOV (8)	EF		Mild/dry		2.61	A	
24	EFHV039	ESW TRAIN A TO SW CROSS CONNECT VALVE	MOV (8)	EF		Mild/dry		2.81	A	
25	EFHV051	ESW A TO CCW HX A	MOV (8)	EF		Mild/dry			A	
26	EFHV097	ESW PUMP A DISCHARGE RECIRC VALVE	MOV (8)	EF		Hot/dry			A	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
27	EFTE0061	ESW A TEMP TO POWER BLOCK	Temp. Sensor (19)	EF		Mild/dry			A	Item specifically selected due to past issues in area (water leaks)
28	EGHV101	CCW TO RHR HX A ISO	MOV (8)	EG		Mild/dry			A	
29	EGLT001	CCW SURGE TK A	Inst. Racks (18)	EG		Mild/dry			A	
30	EJFCV610	RHR PUMP A MINIFLOW VALVE	MOV (8)	EJ		Hot/dry			A	
31	EJFIS610	RHR PMP 1A MINIFLOW CONTROL DISCHARGE <TIME CRITICAL ACTION EQUIPMENT>	Inst. Racks (18)	EJ		Mild/dry			A	
32	EJHV8809A	RHR TO ACCUM INJ LOOPS 1 & 2 ISO VLV	MOV (8)	EJ		Mild/dry			A	
33	EKJ03A	INTERCOOLER HEAT EXCHANGER	Heat Exchangers (21)	KJ	X	Hot/humid			A	Replacement equipment, anchorage changed. Structural platform was disassembled for equipment replacement.
34	EKJ04A	LUBE OIL COOLER	Heat Exchangers (21)	KJ	X	Hot/humid			A	Replacement equipment, anchorage changed

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
35	EKJ06A	DIESEL JACKET WATER HEAT EXCHANGER	Heat Exchangers (21)	KJ	X	Hot/humid			A	Replacement equipment, anchorage changed
36	EMFT917A	CCP A TO BIT FLOW TRANSMITTER	Inst. Racks (18)	EM		Mild/chemical			A	
37	EMHV8814A	SI PUMP A RETURN TO RWST ISO VLV	MOV (8)	EM		Hot/dry			A	
38	EMHV8923A	SAFETY INJECTION PUMP A SUCT ISO VALVE	MOV (8)	EM		Hot/dry			A	
39	EPHV8808A	ACCUMULATOR TANK A OUTLET ISO VALVE	MOV (8)	EP		Hot/humid			A	
40	FCFV313	TDAFP GOVERNOR VALVE	POV (7)	FC		Hot/dry			Other	
41	FEF02A	ESW SELF- CLEANING STRAINER (MTR OP.-IN MOV PROG.)	Other (0)	EF		Hot/dry			A	
42	GKV765	SGK04A WATER REGULATING VALVE	MOV (8)	GK		Mild/dry			A	
43	GKV767	SGK05A WATER REGULATING VALVE	MOV (8)	GK		Cool/dry			A	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
44	GMD0001	DG VENT SPLY FAN A SUCT OUT AIR BACKDRAFT DMPR	Other (0)	GM		Hot/humid			A	
45	GMTE001	DIESEL GEN VENT SUPPLY FAN 1A	Temp. Sensor (19)	GM		Hot/humid			A	
46	GMTZ001B	ACT FOR DG VENT SUPPLY FAN DAMPER GMD0007	Other (0)	GM		Hot/humid			A	
47	GNPT935	CONTAINMENT ATMOSPHERE	Inst. Racks (18)	GN		Mild/dry			A	
48	GSHV0021	H2 PURGE OUTER CTMT ISO BUTT VLV	MOV (8)	GS		Mild/dry			B	
49	GTRE0032	CTMT ATMOSPHERE RADIATION MONITOR	Inst. Racks (18)	GT		Mild/dry			A	
50	JELT0001	EMERG F/O DAY TK A LEV XMTR	Inst. Racks (18)	JE		Hot/humid			A	
51	KAPCV101	TKA03 OUTLET PRESSURE CONTROL VALVE	POV (7)	KA		Mild/dry			A	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
52	KJ121	GAUGE PANEL	Control Panel (20)	KJ		Hot/humid	X		A	IPEEE Vulnerability Enhancement (resolution in IPEEE subsection 3.1.4.5.3 HCLFP Calculation): An HCLPF calculation was performed with a result of 0.49g to show adequate seismic margin.
53	KKJ01A	STANDBY DIESEL (GENERATOR)	Eng. Gen. (17)	KJ		Hot/humid			A	
54	NB02	4.16 KV BUS #2	Med. Volt Swgr. (3)	NB		Cool/dry		4.47	B	Schedule for refueling outage
55	NE01	STANDBY #1	Eng. Gen. (17)	NE		Hot/humid			A	
56	NF039A	CONT SHED/SEQ CH 1 LOGIC	Control Panel (20)	NF		Cool/dry			A	
57	NG02	480 VAC	Low Volt Swgr. (2)	NG		Cool/dry		4.39	B	
58	NG02A	480 VAC	MCC (1)	NG		Cool/dry		4.37	B	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
59	NG04C	480 VAC	MCC (1)	NG		Mild/dry	X	3.28	B	IPEEE Vulnerability Enhancement (resolution in IPEEE subsection 3.1.4.5.2): The MCCs were mounted with their top-mounted spray shields in contact with the adjacent building walls, which would result in a seismic interaction during the RLE. The MCCs were anchored to the adjacent walls by angle braces attached to both the wall and MCC. Photos by a member of the SRT verified the modifications.
60	NG07	LC 480 VAC	Low Volt Swgr. (2)	NG		Hot/dry			A	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
61	NG07F	MCC 480 VAC	MCC (1)	NG		Hot/dry	X		A	IPEEE Vulnerability Enhancement (resolution in IPEEE subsection 3.1.4.5.2): The MCCs were mounted with their top-mounted spray shields in contact with the adjacent building walls, which would result in a seismic interaction during the RLE. The MCCs were anchored to the adjacent walls by angle braces attached to both the wall and MCC. Photos by a member of the SRT verified the modifications.
62	NK01	125 VDC BUS SWITCHBOARD	Dist. Panel (14)	NK		Cool/dry		8.53	A	
63	NK11	125-VDC NO.1 60- CELL BATTERY	Battery Rack (15)	NK		Cool/dry			A	
64	NK13	125-VDC NO.3 60- CELL BATTERY	Battery Rack (15)	NK		Cool/dry			A	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
65	NK21	125 VDC NO 1	Battery Chg (16)	NK		Cool/dry			A	
66	NK23	125 VDC NO 3	Battery Chg (16)	NK		Cool/dry			A	
67	NK41	DIST 125 VDC	Dist. Panel (14)	NK		Cool/dry		3.64	A	
68	NN13	7.5 KVA	Battery Chg (16)	NN		Cool/dry			A	
69	PAL01A	AUX FEEDWATER PUMP	Horz. Pumps (5)	AL		Hot/dry	X		A	IPEEE Vulnerability Enhancement (resolution in IPEEE subsection 3.1.4.5.2): The AFW pumps were mounted without the shear pins required by their seismic qualification documentation installed. The AFW pumps had the missing shear pins installed in their pump foundations. Photos by a member of the SRT verified the modifications.

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
70	PAL02	AFW PUMP– TURBINE DRIVEN	Horz. Pumps (5)	AL		Hot/dry	X		Other	IPEEE Vulnerability Enhancement (resolution in IPEEE subsection 3.1.4.5.2): The AFW pumps were mounted without the shear pins required by their seismic qualification documentation installed. The AFW pumps had the missing shear pins installed in their pump foundations. Photos by a member of the SRT verified the modifications.
71	PBG04	NORMAL CHARGING CCP	Horz. Pumps (5)	BG	X	Hot/dry		4.32	Other	Positive displacement pump replaced with normal CP
72	PBG05A	CENTRIFUGAL CHARGING PUMP	Horz. Pumps (5)	BG		Hot/dry		2.3	A	
73	PEG01A	COMPONENT COOL. WATER PUMP	Horz. Pumps (5)	EG		Mild/dry			A	
74	PEM01A	SAFETY INJ. PUMP	Horz. Pumps (5)	EM		Hot/dry			A	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
75	PEN01A	CONTAINMENT SPRAY PUMP A	Vert. Pump (6)	EN		Hot/dry			A	
76	RL025	TURBOGENERATO R AND FW MCB	Control Panel (20)	RL		Cool/dry			Other	
77	RP081A	SUBCOOLING MONITORING CABINET	Control Panel (20)	RP	X	Cool/dry			A	Power supply changed as a recent modification (CARS #200600836)
78	RP139	B AUXILIARY RELAY	Control Panel (20)	RP		Cool/dry			A	
79	RP289	DC DISTRIBUTION	Control Panel (20)	RP		Mild/dry			A	
80	RP315	125V DC DIST PANEL	Control Panel (20)	RP		Hot/dry			A	
81	SA036A	ESFAS CH1 TERM	Control Panel (20)	SA		Cool/dry		2.31	A	
82	SA036D	ESFAS CH1 LOGIC CABINET	Control Panel (20)	SA		Cool/dry		2.31	A	
83	SB037	W PROCESS ANALOG PROTECTION SET CAB-03	Control Panel (20)	SB		Cool/dry		177.13	A	
84	SB078	RPV LEVEL INSTR SYS PROC PROT SYS	Control Panel (20)	SB		Cool/dry		177.13	A	
85	SE054A	W NUC INSTM NIS 1	Control Panel (20)	SE		Cool/dry			A	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
86	SENY032AB	PREAMP SR CHAN 2	Control Panel (20)	SE		Mild/dry			B	
87	SENY060A	EXCORE NEUTRON DETECTOR AMPLIFIER	Control Panel (20)	SE		Mild/dry			A	
88	SGK04A	CONTROL ROOM A/C UNITS	AHU (10)	GK		Mild/dry			A	
89	SGK05A	CLASS 1E ELEC. EQUIP. A/C UNIT	AHU (10)	GK		Cool/dry			A	
90	SGL09A	SAFETY INJECTION PUMP ROOM COOLER	AHU (10)	GL		Hot/dry			A	
91	SGL13A	CTMT SPRAY PUMP ROOM COOLER	AHU (10)	GL		Hot/dry			A	
92	SGL15A	PENETRATION ROOMCOOLER	AHU (10)	GL		Mild/dry			A	
93	TEG01A	CCW SURGE TANK A	Tank (21)	EG		Mild/dry			A	
94	TJE02A	EMERGENCY FUEL OIL DAY TANK	Tank (21)	JE		Hot/humid			A	
95	TKA03	AFW CTRL/MAIN STEAM ARV ACCUM	Tank (21)	KA		Mild/dry			A	
96	TKJ01A	D/G A JACKET WATER EXPANSION TANK	Tank (21)	KJ		Hot/humid			A	

Callaway SWEL 1 (cont.)										
SWEL 1 Item Number	Walkdown Equipment ID	Description	Screen No. 4 Sample Considerations					Risk Importance (RAW)	Train	SWEL 1 Comments
			Equipment Class	System Type	Major New or Replacement Equipment	Environment ⁽¹⁾	IPEEE Vulnerability Enhancement			
97	TKJ02B	START AIR TANK D/G	Tank (21)	KJ		Hot/humid			A	
98	TKJ04A	D/G A AUX LUBE OIL TANK	Tank (21)	KJ		Hot/humid			A	
99	XNG01	CLASS 1E LOAD CENTER TRANSFORMER	Transformer (4)	NG		Cool/dry		17.28	A	
100	XNG03	CLASS 1E LOAD CENTER TRANSFORMER	Transformer (4)	NG		Cool/dry		3.64	A	
101	XNG05	FEED MCC NG05E	Transformer (4)	NG		Hot/dry		2.41	A	
102	XPN07A	120 V INSTRUMENT AC TRANSFORMER	Transformer (4)	PN		Cool/dry			A	
Note: 1. Environment: Hot > 110°F; Cool < 95°F; Mild = the temperature range between hot and cool. Humid > 90%; Dry <= 70%; Chemical = contains potential chemical exposure.										

APPENDIX G
CALLAWAY COMPOSITE SWEL



**Seismic Walkdown Equipment List, Revision 1
In Response to NTTF Recommendation 2.3: Seismic**

Callaway Nuclear Power Plant

TERRY KELLER *Terry Keller* 9/26/12
Equipment Selection Personnel Lead date

DEREK SEAMAN *Derek Seaman* 9/26/12
Equipment Selection Personnel date

RICK DENNY
Station Operations date



**Seismic Walkdown Equipment List, Revision 1
In Response to NTTF Recommendation 2.3: Seismic**

Callaway Nuclear Power Plant

TERRY KELLER
Equipment Selection Personnel Lead date

DEREK SEAMAN
Equipment Selection Personnel date

RICK DENNY *Rick Denny* 10/3/12
Station Operations date

Seismic Walkdown Equipment List, Rev. 1
NTTF Recommendation 2.3: Seismic Walkdown

Attachment to LTR-RAM-II-098, Rev. 0
Callaway Nuclear Power Plant

Revision History

Revision 0, dated August 31, 2012, was the original version of this document. It provided the Seismic Walkdown Equipment List (SWEL) developed prior to the Callaway at-power Seismic Walkdowns performed during the week of September 10th, 2012. The SWEL contained a total of 108 components (102 in SWEL 1 and 6 in SWEL 2).

Revision 1 of this document updates the Callaway SWEL per the SWEL Peer Review which occurred on September 6, 2012. The following modifications were incorporated:

SWEL 1 Item No.	Equipment ID	Equipment Class	
		Revision 0	Revision 1
40	FCFV313	MOV (8)	POV (7)
44	GMD0001	Fan (9)	Other (0)
50	JELT0001	Other (0)	Inst. Racks (18)

As a result of these modifications, the number of items in the SWEL remain the same; i.e. a total of 108 components, 102 in SWEL 1 and 6 in SWEL 2.

A review of the Revision 1 changes verified that the requirements of "Screen #4 – Sample Considerations" of the Seismic Walkdown Guidance {Reference 1} are maintained.

Seismic Walkdown Equipment List, Rev. 1
NTTF Recommendation 2.3: Seismic Walkdown

Attachment to LTR-RAM-II-12-098, Rev. 0
Callaway Nuclear Power Plant

Seismic Walkdown Equipment List (SWEL)

A listing of structures, systems, and components (SSCs) that will be viewed during the walkdown, the Seismic Walkdown Equipment List (SWEL), has been prepared in advance of the walkdown effort.

The selection of SSCs process described in EPRI Technical Report 1025286, Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic, dated June 2012 {Reference 1}, was utilized to develop the SWEL for Callaway.

The SWEL is comprised of two groups of items:

- ❖ SWEL 1 (Attachment 1) is a sample of items to safely shut down the reactor and maintain containment integrity
- ❖ SWEL 2 (Attachment 2) is a list of spent fuel pool related items

Callaway Operations and Engineering Staff Members participated in the selection of SSCs compiling the SWEL and provided direct input to the Equipment Selection Personnel during the SWEL development process. This input included:

- Confirmation of the equipment information retrieved from the Callaway Seismic Category I documentation.
- Discussions with the Equipment Selection Personnel to identify upgrades, modifications, and replacements of equipment which might be pertinent to the selection of the SWEL.
- Input into the selection of the SWEL using operational experience relevant to equipment classifications, safety function support, and environmental considerations.
- Approval of the components selected for the SWEL.

The process detailed in Reference 1 for the Selection of SSCs to produce the SWEL was discussed with the Callaway Operations and Engineering Staff Members during the site visit August 20th through 22nd, 2012. In addition to the Callaway Operations and Engineering Staff Members, one member of the Peer Review Team participated in the discussions during the site visit. The details describing the process for Selection of SSCs to produce the SWEL will be provided in the "Selection of SSCs" section of the Submittal Report.

References

1) EPRI Technical Report 1025286, Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic, dated June 2012.

Seismic Walkdown Equipment List, Rev. 1
NTTF Recommendation 2.3: Seismic Walkdown

Attachment to LTR-RAM-II-12-098, Rev. 0
Callaway Nuclear Power Plant

Attachments

- 1) Seismic Walkdown Equipment List 1
- 2) Seismic Walkdown Equipment List 2

Seismic Walkdown Equipment List, Rev. 1
NTTF Recommendation 2.3: Seismic Walkdown

Attachment to LTR-RAM-II-098, Rev. 0
Callaway Nuclear Power Plant

Attachment 1 – SWEL 1

SWEL Item Number	Walkdown Equipment ID	Description	Building	Screen #1 (SC 1 Licensing Basis?)	Screen #2 (Screens In?)	Screen #3 (Safety Function Support)**	Screen #4 Sample Considerations					Train	Comments
							Equipment Class	System Type	Major new or replacement equipment	Environment	IPEEE vulnerability enhancement		
1	ABHV0014	LOOP-I MAIN STEAM ISOLATION VALVE	AUX	Yes	Yes	PC DHR	POV (7)	AB	X	hot/dry		Other	Actuator replacement
2	ABPT001	STM GEN A STEAMLINE PRESSURE	AUX	Yes	Yes	PC DHR	Inst. Racks (18)	AB		mild/dry		A	
3	ABPV001	SG A ATMOSPHERIC RELIEF VLV	AUX	Yes	Yes	PC DHR	POV (7)	AB	X	hot/dry		A	Controller moved
4	AEPV039	EBB01A FEEDWATER ISOLATION VALVE	AUX	Yes	Yes	PC DHR	POV (7)	AE	X	hot/dry		Other	Valve operator and controls replacement
5	AELT0501	STM GEN A WIDE RANGE	RB	Yes	Yes	PC DHR	Inst. Racks (18)	AE		hot/humid		A	
6	AELT518	STM GEN LEVEL A NARROW RANGE	RB	Yes	Yes	PC DHR	Inst. Racks (18)	AE		hot/humid		A	
7	ALHV031	ESW TO MDAFW PUMP A 6" BTFL VLV W/LIMITQ	AUX	Yes	Yes	PC DHR	VALVE (8)	AL		hot/humid		A	
8	BBLIS1312	RV SUBCOOLING MONITOR TRN A	AUX	Yes	Yes	RC	Inst. Racks (18)	BB		mild/dry		A	
9	BBPT455	PRESSURIZER PRESSURE	RB	Yes	Yes	PC	Inst. Racks (18)	BB		hot/humid		A	
10	BGFCV0121	CENTRIFUGAL CHG PMP FLOW CONTROL	AUX	Yes	Yes	RC PC IC	POV (7)	BG		hot/dry		Other	
11	BGFCV0124	CVCS NCP DISCH HDR FCV	AUX	Yes	Yes	PC IC	POV (7)	BG		hot/dry		Other	
12	BGHV8106	CHARGING PUMPS TO REGENERATIVE HX ISO	AUX	Yes	Yes	PC IC	MOV (8)	BG		mild/dry		A	
13	BGHV8152	LETDOWN SYSTEM CONTAINMENT ISO VLV	AUX	Yes	Yes	IC CF	POV (7)	BG		mild/dry		B	
14	BLHV8047	REACTOR M/U WATER CONTAINMENT ISO	AUX	Yes	Yes	IC CF	POV (7)	BL		mild/dry		B	
15	BMHV001	SG A BLOWDOWN AFAS ISO	AUX	Yes	Yes	PC IC CF	POV (7)	BM		hot/dry		A	
16	BNHV004	RWST SUPPLY TO CTMT SPRAY PUMP A	AUX	Yes	Yes	CF	MOV (8)	BN		hot/dry		A	
17	BNLT930	RWST LEVEL TRANSMITTER (1)	YRD	Yes	Yes	RC IC DHR	Inst. Racks (18)	BN		hot/humid		A	
18	CEFD1A	ESW ULTIMATE HEAT SINK COOLING TOWER FAN A	ULTIMATE HEAT SINK	Yes	Yes	IC DHR	Fan (9)	EF		hot/dry		A	
19	CGN03A	CONTAINMENT HYDROGEN MIXING FAN	RB	Yes	Yes	CF	Fan (9)	GN	X	hot/humid		A	Motor terminal box replaced with larger size terminal box (CARS #20100-1800).
20	EEG01A	COMPONENT COOL WATER HEAT EXCHANGER	AUX	Yes	Yes	RC PC IC DHR	Heat Exchangers (21)	EG	X	mild/dry	X	A	Head replacement post IPEEE (CARS #200906211). IPEEE Vulnerability Enhancement (Resolution in IPEEE Section 2.1.4.5.3 HCLFP Calculation): A HCLFP calculation was performed with a result of 0.41g to show adequate seismic margin.
21	EEJ01A	RESIDUAL HEAT REMOVAL HEAT EXCHANGER	AUX	Yes	Yes	DHR	Heat Exchangers (21)	EJ		mild/dry		A	
22	EF153	ESW CONTROL PANEL	ESW	Yes	Yes	RC PC IC DHR CF	Control Panel (20)	EF		hot/dry		A	
23	EFHV037	ESW A TO ULTIMATE HEAT SINK THROTTLED	CB-CC	Yes	Yes	RC PC IC DHR CF	MOV (8)	EF		mild/dry		A	

Seismic Walkdown Equipment List, Rev. 1
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Callaway Nuclear Power Plant

SWEL Item Number	Walkdown Equipment ID	Description	Building	Screen #1 (SC 1 Licensing Basis?)	Screen #2 (Screens In?)	Screen #3 (Safety Function Support)**	Screen #4 Sample Considerations					Train	Comments
							Equipment Class	System Type	Major new or replacement equipment	Environment	IPEEE vulnerability enhancement		
24	EFHV039	ESW TRAIN A TO SW CROSS CONNECT VALVE	CB/CC	Yes	Yes	RC PC IC DHR CF	MOV (8)	EF		mild/dry		A	
25	EFHV051	ESW A TO CCW HX A	AUX	Yes	Yes	RC PC IC DHR CF	MOV (8)	EF		mild/dry		A	
26	EFHV097	ESW PUMP A DISCHARGE RECIRC VALVE	ESW	Yes	Yes	RC PC IC DHR CF	MOV (8)	EF		hot/dry		A	
27	EFTE0061	ESW A TEMP TO POWER BLOCK	CB/CC	Yes	Yes	RC PC IC DHR CF	Temp. Sensor (19)	EF		mild/dry		A	Item specifically selected due to past issues in area (water leaks)
28	EGHV101	CCW TO RHR HX A ISO	AUX	Yes	Yes	RC IC DHR	MOV (8)	EG		mild/dry		A	
29	EGLT001	CCW SURGE TK A	AUX	Yes	Yes	DHR	Inst. Racks (18)	EG		mild/dry		A	
30	EJFCV610	RHR PUMP A MINIFLOW VALVE	AUX	Yes	Yes	DHR	MOV (8)	EJ		hot/dry		A	
31	EJFIS610	RHR PMP 1A MINIFLOW CONTROL DISCHARGE <TIME CRITICAL ACTION EQUIPMENT>	AUX	Yes	Yes	DHR	Inst. Racks (18)	EJ		mild/dry		A	
32	EJHV809A	RHR TO ACCUM INJ LOOPS 1 & 2 ISO VLV	AUX	Yes	Yes	DHR	MOV (8)	EJ		mild/dry		A	
33	EKJ03A	INTERCOOLER HEAT EXCHANGER	DGB	Yes	Yes	RC PC IC DHR CF	Heat Exchangers (21)	KJ	X	hot/humid		A	Replacement equipment, anchorage changed. Structural platform was disassembled for equipment replacement
34	EKJ04A	LUBE OIL COOLER	DGB	Yes	Yes	RC PC IC DHR CF	Heat Exchangers (21)	KJ	X	hot/humid		A	Replacement equipment, anchorage changed
35	EKJ06A	DIESEL JACKET WATER HEAT EXCHANGER	DGB	Yes	Yes	RC PC IC DHR CF	Heat Exchangers (21)	KJ	X	hot/humid		A	Replacement equipment, anchorage changed
36	EMFT917A	CCP A TO BIT FLOW TRANSMITTER	AUX	Yes	Yes	RC IC DHR	Inst. Racks (18)	EM		mild/chemical		A	
37	EMHV8814A	SI PUMP A RETURN TO RWST ISO VLV	AUX	Yes	Yes	RC IC DHR	MOV (8)	EM		hot/dry		A	
38	EAHV8923A	SAFETY INJECTION PUMP A SUCT ISO VALVE	AUX	Yes	Yes	IC DHR	MOV (8)	EM		hot/dry		A	
39	EPHV8808A	ACCUMULATOR TANK A OUTLET ISO VALVE	RB	Yes	Yes	DHR	MOV (8)	EP		hot/humid		A	
40	FCPV313	TDAPP GOVERNOR VALVE	AUX	Yes	Yes	PC DHR	POV (7)	FC		hot/dry		Other	
41	FEF02A	ESW SELF-CLEANING STRAINER (MTR OP-IN MOV PROG.)	ESW	Yes	Yes	RC PC IC DHR CF	Other (0)	EF		hot/dry		A	
42	GKV765	SGK03A WATER REGULATING VALVE	CB	Yes	Yes	RC PC IC DHR CF	MOV (8)	GK		mild/dry		A	
43	GKV767	SGK03A WATER REGULATING VALVE	CB	Yes	Yes	RC PC IC DHR CF	MOV (8)	GK		cool/dry		A	
44	GMD0001	DG VENT SPLY FAN A SUCT OUT AIR BACKDRAFT DMPR	DGB	Yes	Yes	RC PC IC DHR CF	Other (0)	GM		hot/humid		A	
45	GMFE001	DIESEL GEN VENT SUPPLY FAN 1A	DGB	Yes	Yes	RC PC IC DHR CF	Temp. Sensor (19)	GM		hot/humid		A	
46	GMT2001B	ACT FOR DG VENT SUPPLY FAN DAMPER GMD0007	DGB	Yes	Yes	RC PC IC DHR CF	Other (0)	GM		hot/humid		A	
47	GNPT935	CONTAINMENT ATMOSPHERE	AUX	Yes	Yes	CF	Inst. Racks (18)	GN		mild/dry		A	

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SWEL Item Number	Walkdown Equipment ID	Description	Building	Screen #1 (SC 1 Licensing Basis?)	Screen #2 (Screens In?)	Screen #3 (Safety Function Support)**	Screen #4 Sample Considerations					Train	Comments
							Equipment Class	System Type	Major new or replacement equipment	Environment	IPEEE vulnerability enhancement		
48	GSHV0021	H2 PURGE OUTER CTMT ISO BUTT VLV	AUX	Yes	Yes	CF	MOV (8)	GS		mild/dry		B	
49	GTRE0032	CTMT ATMOSPHERE RADIATION MONITOR	AUX	Yes	Yes	CF	Inst. Racks (18)	GT		mild/dry		A	
50	JELT0001	EMERG F/O DAY TK A LEV XMTR	DGB	Yes	Yes	RC PC IC DHR CF	Inst. Racks (18)	JE		hot/humid		A	
51	KAPCV101	TKA03 OUTLET PRESSURE CONTROL VALVE	AUX	Yes	Yes	DHR	POV (7)	KA		mild/dry		A	
52	KJ121	GAUGE PANEL	DG	Yes	Yes	RC PC IC DHR CF	Control Panel (20)	KJ		hot/humid	X	A	IPEEE Vulnerability Enhancement (Resolution in IPEEE Section 3.1.4.5.3 HCLFP Calculation): A HCLFP calculation was performed with a result of 0.49g to show adequate seismic margin.
53	KK01A	STANDBY DIESEL (GENERATOR)	DGB	Yes	Yes	RC PC IC DHR CF	Eng. Gen. (17)	KJ		hot/humid		A	
54	NB02	4.16 KV BUS #2	CB	Yes	Yes	RC PC IC DHR CF	Med. Volt Swgr. (3)	NB		cool/dry		B	Schedule for refueling outage.
55	NE01	STANDBY #1	DGB	Yes	Yes	RC PC IC DHR CF	Eng. Gen. (17)	NE		hot/humid		A	
56	NF039A	CONT SHED/SEQ CH 1 LOGIC	CB/CC	Yes	Yes	RC PC IC DHR CF	Control Panel (20)	NF		cool/dry		A	
57	NG02	480 VAC	CB/CC	Yes	Yes	RC PC IC DHR CF	Low Volt Swgr. (2)	NG		cool/dry		B	
58	NG02A	480 VAC	CB/CC	Yes	Yes	RC PC IC DHR CF	MCC (1)	NG		cool/dry		B	
59	NG04C	480 VAC	AUX	Yes	Yes	RC PC IC DHR CF	MCC (1)	NG		mild/dry	X	B	IPEEE Vulnerability Enhancement (Resolution in IPEEE Section 3.1.4.5.2): The MCCs were mounted with their top-mounted spray shields in contact with the adjacent building walls which would result in a seismic interaction during the RLE. The MCCs were anchored to the adjacent walls by angle braces attached to both the wall and MCC. Photos by a member of the SRT verified the modifications.
60	NG07	LC 480 VAC	ULTIMATE HEAT SINK	Yes	Yes	IC DHR	Low Volt Swgr. (2)	NG		hot/dry		A	
61	NG07F	MCC 480 VAC	ULTIMATE HEAT SINK	Yes	Yes	IC DHR	MCC (1)	NG		hot/dry	X	A	IPEEE Vulnerability Enhancement (Resolution in IPEEE Section 3.1.4.5.2): The MCCs were mounted with their top-mounted spray shields in contact with the adjacent building walls which would result in a seismic interaction during the RLE. The MCCs were anchored to the adjacent walls by angle braces attached to both the wall and MCC. Photos by a member of the SRT verified the modifications.
62	NK01	125 VDC BUS SWITCHBOARD	CB/CC	Yes	Yes	RC PC IC DHR CF	Dist. Panel (14)	NK		cool/dry		A	
63	NK11	125-VDC NO.1 60-CELL BATTERY	CB/CC	Yes	Yes	RC PC IC DHR CF	Battery Rack (15)	NK		cool/dry		A	
64	NK13	125-VDC NO.3 60-CELL BATTERY	CB/CC	Yes	Yes	RC PC IC DHR CF	Battery Rack (15)	NK		cool/dry		A	
65	NK21	125 VDC NO 1	CB/CC	Yes	Yes	RC PC IC DHR CF	Battery Chg (16)	NK		cool/dry		A	
66	NK23	125 VDC NO 3	CB/CC	Yes	Yes	RC PC IC DHR CF	Battery Chg (16)	NK		cool/dry		A	

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SWEL Item Number	Walkdown Equipment ID	Description	Building	Screen #1 (SC 1 Licensing Basis?)	Screen #2 (Screens In?)	Screen #3 (Safety Function Support)**	Screen #4 Sample Considerations					Train	Comments
							Equipment Class	System Type	Major new or replacement equipment	Environment	IPEEE vulnerability enhancement		
67	NK4I	DIST 125 VDC	CB/CC	Yes	Yes	RC PC IC DHR CF	Dist. Panel (14)	NK		cool/dry		A	
68	NN13	7.5 KVA	CB/CC	Yes	Yes	RC PC IC DHR CF	Battery Chg (16)	NN		cool/dry		A	
69	PAL01A	AUX FEEDWATER PUMP	AUX	Yes	Yes	PC DHR	Horz. Pumps (5)	AL		hot/dry	X	A	IPEEE Vulnerability Enhancement (Resolution in IPEEE Section 3.1.4.5.2): The AFW pumps were mounted without the shear pins required by their seismic qualification documentation installed. The AFW pumps had the missing shear pins installed in their pump foundations. Photos by a member of the SRT verified the modifications.
70	PAL02	AFW PUMP-TURBINE DRIVEN	AUX	Yes	Yes	PC DHR	Horz. Pumps (5)	AL		hot/dry	X	Other	Coordinate with Work Site Management on availability. IPEEE Vulnerability Enhancement (Resolution in IPEEE Section 3.1.4.5.2): The AFW pumps were mounted without the shear pins required by their seismic qualification documentation installed. The AFW pumps had the missing shear pins installed in their pump foundations. Photos by a member of the SRT verified the modifications.
71	PBG04	NORMAL CHARGING CCP	AUX	Yes	Yes	RC PC IC	Horz. Pumps (5)	BG	X	hot/dry		Other	Positive Placement pump replaced with normal CP
72	PBG05A	CENTRIFUGAL CHARGING PUMP	AUX	Yes	Yes	RC PC IC DHR	Horz. Pumps (5)	BG		hot/dry		A	
73	PEG01A	COMPONENT COOL. WATER PUMP	AUX	Yes	Yes	RC PC IC DHR CF	Horz. Pumps (5)	EG		mild/dry		A	
74	PEM01A	SAFETY INJ. PUMP	AUX	Yes	Yes	IC DHR	Horz. Pumps (5)	EM		hot/dry		A	
75	PEN01A	CONTAINMENT SPRAY PUMP A	AUX	Yes	Yes	CF	Vert. Pump (6)	EN		hot/dry		A	
76	RL025	TURBOGENERATOR AND FW MCB	CB	Yes	Yes	PC DHR	Control Panel (20)	RL		cool/dry		Other	
77	RP081A	SUBCOOLING MONITORING CABINET	CB	Yes	Yes	DHR	Control Panel (20)	RP	X	cool/dry		A	Power supply changed as a recent modification (CARS #200600836)
78	RP139	B AUXILIARY RELAY	CB	Yes	Yes	RC PC IC DHR CF	Control Panel (20)	RP		cool/dry		A	
79	RP289	DC DISTRIBUTION	AUX	Yes	Yes	PC IC DHR CF	Control Panel (20)	RP		mild/dry		A	
80	RP315	125V DC DIST PANEL	ESW	Yes	Yes	PC DHR CF	Control Panel (20)	RP		hot/dry		A	
81	SA036A	ESFAS CHU TERM	CB/CC	Yes	Yes	RC PC IC DHR CF	Control Panel (20)	SA		cool/dry		A	
82	SA036D	ESFAS CHU LOGIC CABINET	CB/CC	Yes	Yes	RC PC IC DHR CF	Control Panel (20)	SA		cool/dry		A	
83	SB037	W PROCESS ANALOG PROTECTION SET CAB-03	CB/CC	Yes	Yes	RC PC IC DHR CF	Control Panel (20)	SB		cool/dry		A	
84	SB078	RPV LEVEL INSTR SYS PROC PROT SYS	CB	Yes	Yes	IC	Control Panel (20)	SB		cool/dry		A	

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SWEL Item Number	Walkdown Equipment ID	Description	Building	Screen #1 (SC 1 Licensing Basis?)	Screen #2 (Screens In?)	Screen #3 (Safety Function Support)**	Screen #4 Sample Considerations					Train	Comments
							Equipment Class	System Type	Major new or replacement equipment	Environment	IPEEE vulnerability enhancement		
85	SE054A	W NUC INSTRM NIS 1	CB/CC	Yes	Yes	RC	Control Panel (20)	SE		cool/dry		A	
86	SENY032AB	PREAMP SR CHAN 2	AUX	Yes	Yes	RC	Control Panel (20)	SE		mild/dry		B	
87	SENY060A	EXCORE NEUTRON DETECTOR AMPLIFIER	AUX	Yes	Yes	RC	Control Panel (20)	SE		mild/dry		A	
88	SGK04A	CONTROL ROOM A/C UNITS	AUX	Yes	Yes	RC PC IC DHR CF	AHU (10)	GK		mild/dry		A	
89	SGK05A	CLASS 1E ELEC. EQUIP. A/C UNIT	CB/CC	Yes	Yes	RC PC IC DHR CF	AHU (10)	GK		cool/dry		A	
90	SGL09A	SAFETY INJECTION PUMP ROOM COOLER	AUX	Yes	Yes	IC DHR	AHU (10)	GL		hot/dry		A	
91	SGL13A	CTMT SPRAY PUMP ROOM COOLER	AUX	Yes	Yes	CF	AHU (10)	GL		hot/dry		A	
92	SGL15A	PENETRATION ROOM COOLER	AUX	Yes	Yes	CF	AHU (10)	GL		mild/dry		A	
93	TEG01A	CCW SURGE TANK A	AUX	Yes	Yes	RC PC IC DHR CF	Tank (21)	EG		mild/dry		A	
94	TJE02A	EMERGENCY FUEL OIL DAY TANK	DGB	Yes	Yes	RC PC IC DHR CF	Tank (21)	JE		hot/humid		A	
95	TKA03	APW CTRL/MAN STEAM ARV ACCUM	AUX	Yes	Yes	PC DHR	Tank (21)	KA		mild/dry		A	
96	TKJ01A	D/G A JACKET WATER EXPANSION TANK	DGB	Yes	Yes	RC PC IC DHR CF	Tank (21)	KJ		hot/humid		A	
97	TKJ02B	START AIR TANK D/G	DG	Yes	Yes	RC PC IC DHR CF	Tank (21)	KJ		hot/humid		A	
98	TKJ04A	D/G A AUX LUBE OIL TANK	DGB	Yes	Yes	RC PC IC DHR CF	Tank (21)	KJ		hot/humid		A	
99	XNG01	CLASS 1E LOAD CENTER TRANSFORMER	CB/CC	Yes	Yes	RC PC IC DHR CF	Transformer (4)	NG		cool/dry		A	
100	XNG03	CLASS 1E LOAD CENTER TRANSFORMER	CB/CC	Yes	Yes	RC PC IC DHR CF	Transformer (4)	NG		cool/dry		A	
101	XNG05	FEED MCC NG05E	ESW	Yes	Yes	IC DHR	Transformer (4)	NG		hot/dry		A	
102	XPN07A	120 V INSTRUMENT AC TRANSFORMER	CB/CC	Yes	Yes	RC IC DHR	Transformer (4)	PN		cool/dry		A	

** Reactor Reactivity Control (RC)
Reactor Coolant Pressure Control (PC)
Reactor Coolant Inventory Control (IC)
Decay Heat Removal (DHR)
Containment Function (CF)

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Attachment 2 – SWEL 2

SWEL Item Number	Walkdown Equipment	Description	Equipment Class	System Type	Building	Screen #1 (Seismic Licensing Basis?)	Screen #2 (Screens In?)	Associated with Rapid Draindown?	Comment
1	HEC01A	FUEL POOL COOLING HEAT EXCHANGER	Heat Exchangers	EC	FB	Yes	Yes	No	
2	SGG04A	SFP PUMP ROOM COOLER A	AHU	GG	FB	Yes	Yes	No	
3	PEC01A	FUEL POOL COOLING PUMP	PUMP	EC	FB	Yes	Yes	No	
4	ECHV011	FUEL POOL HEAT EXCHANGER SHELL SIDE OUTLET ISO	MOV	EC	FB	Yes	Yes	No	
5	ECFT0017	FUEL POOL COOLING PUMP DISCHARGE FLOW TRANSMITTER	Inst Racks	EC	FB	Yes	Yes	No	
6	ECLIT0039	SPENT FUEL POOL LEVEL TRANSMITTER	Inst Racks	EC	CB/CC	Yes	Yes	No	

**APPENDIX H
QUALIFICATIONS**

Seismic Walkdown and SWEL Development Résumés

Samer M. El-Bahey, Ph.D.

Education

Ph.D. Civil Engineering (Structures) (Sep. 2007 – Sep. 2010)

- Dissertation: Analytical Development and Experimental Validation of a Structural-Fuse Bridge Pier Concept.
- Advisor: Prof. Michel Bruneau, Ph.D., P.Eng
- Civil, Structural, & Environmental Eng. Dept. (CSEE), State University of New York at Buffalo, Buffalo, NY, 14260, USA

M.Sc. Civil Engineering (Structures) (GPA: 3.751) (Sep. 2006 – Jun. 2007)

- Civil, Structural, & Environmental Eng. Dept. (CSEE), State University of New York at Buffalo, Buffalo, NY, 14260, USA

B.Sc. Civil Engineering (GPA: 3.9) (Sep. 1998 – Jun. 2003)

- Graduate with Degree of Honor, “Summa Cum Laude equivalent,” ranked 2nd among 777 students
- Project: Design of High Rise steel office Building
- Civil Engineering Department, Alexandria University, Alexandria, Egypt

Professional History

Senior Structural Engineer (Sep. 2010 – Present)

- Stevenson & Associates, Inc. (S&A), Phoenix, AZ

Structural Engineer (Sep. 2003 – Aug. 2006)

- Engineering Consultants Union (ECU), Alexandria, Egypt

Security/Blast Loading Projects

Mr. El-Bahey has performed blast analyses of existing structures for minimum safe standoff distances. He has conducted preliminary wind and seismic loading analysis for the conceptual design of a new security facility. He has also worked on installation of new non-safety cable tray systems on existing hangers, designing anchorages for miscellaneous safety and non-safety-related equipment for seismic and wind loading. He has also designed the support system for newly installed security-related PA cameras and junction boxes.

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Professional History (cont.)

Miscellaneous Nuclear Projects

Mr. El-Bahey has conducted seismic analysis of safety-related structures with soil structure interaction using both response spectrum and nonlinear time history methodologies. Mr. El-Bahey has performed a seismic assessment of Cask Loading Pit structural components due to seismic events occurring at a time where the Cask is hanging using both design basis response spectrum and non-linear finite element analysis, investigating impact effects between the pit and the cask. He has also performed dynamic plastic analyses for piping systems beyond design basis using finite element method techniques. Mr. El-Bahey has also conducted an engineering assessment of concrete beam deficiencies inside containment structure.

Academic Experience

Research Assistant (Sep. 2008 – Aug. 2010)

- Civil, Structural, & Environmental Eng. Dept. (CSEE), State University of New York at Buffalo, Buffalo, NY, 14260, USA

Teaching Assistant (Sep. 2006 – Aug. 2008)

- Civil, Structural, & Environmental Eng. Dept. (CSEE), State University of New York at Buffalo, Buffalo, NY, 14260, USA

Teaching and Research Assistant (Sep. 2003 – Aug. 2006)

- Civil Engineering Department, Alexandria University, Alexandria, Egypt

Part Time Teaching Assistant (Sep. 2003 – Jun. 2006)

- Construction Engineering Department, Arab Academy of Science & Technology (AAST), Alexandria, Egypt

Teaching Experience

State University of New York at Buffalo, Buffalo, NY, USA (Sep. 2006 – Present)

- **Teaching Assistant for undergraduate classes:** duties included recitations, advising, and grading of homework and exams.
 - Statics (EAS 207 – Fall 2006, Summer 2007, Fall 2007, Summer 2008, ~ 80 students).
 - Dynamics (EAS 208 – Spring 2007, ~ 80 students).
 - Steel Design (CIE 428 – Spring 2008, ~ 80 students).
 - Mechanics of Solids (EAS 209 – Summer 2007, ~ 40 students).
 - Foundation Engineering (CIE 435 – Summer 2008, ~ 40 students).
- Teaching assistant for graduate classes: duties included recitations, advising, and grading of homework.
 - Steel Structures (CIE 524 – Spring 2009, ~ 25 students).

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Faculty of Engineering, Alexandria University, Alexandria, Egypt (Sep.2003 – Aug.2006)

- **Teaching Assistant for undergraduate classes:** duties included recitations, advising, and grading of homework and exams.
 - Metallic Structures (CE 372 – Fall 2003, Fall 2004, Fall 2005~ 600 students)
 - Metallic Bridges (CE 476 – Spring 2004, Spring 2005, Spring 2006~ 600 students)
 - Computer Applications in Civil Engineering (CE 146 – Spring 2005 ~ 600 students)
 - Properties of Materials (CE 162 – Fall 2003 ~ 600 students)

Arab Academy of Science & Technology (AAST), Alexandria, Egypt (Sep.2003 – Aug.2006)

- **Teaching Assistant for undergraduate classes:** duties included recitations, advising, and grading of homework and exams.
 - Design of Metallic Structures (CB444 – Fall 2003, Fall 2004, Fall 2005~ 35 students).
 - Special Topics in Steel & Composite Structures (Elective Course) (CB546 –Spring 2004, Spring 2005, Spring 2006~ 35 students).

Awards and Honors

Ph.D. Full Scholarship from State University of New York at Buffalo (Aug. 2007)

M.Sc. Full Scholarship from State University of New York at Buffalo (Aug. 2006)

B.Sc. in Civil Engineering from Faculty of Engineering, Alexandria University (Distinction with Degree of Honor, "Summa Cum Laude equivalent," Ranked 2nd among 777 students (Aug. 2003)

Quonswa award for Excellence in Hydraulics, Alexandria University (Aug. 2001)

Quonswa award for Excellence in Hydraulics, Alexandria University (Aug. 2000)

Professional Society Membership

American Society of Civil Engineers (ASCE) (Aug. 2009-Present)

New York Academy of Sciences (May. 2010-Present)

Registered Professional Engineer in Egypt (Aug. 2003-Present)

President of the Middle East Student Club at State University at Buffalo (MESC) (Sep. 2007- Aug. 2010)

Samer M. El-Bahey, Ph.D.

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Publications

Publications in refereed journals

1. El-Bahey, S., Bruneau, M., "Structural Fuse Concept for Bridges," Transportation Research Record, Vol. 2202/2010, pp. 167-172.
2. El-Bahey, S., Bruneau, M., "Buckling Restrained Braces as Structural Fuses For The Seismic Retrofit of Reinforced Concrete Bridge Bents," Engineering Structures, vol. 33, pp. 1052-1061, 2011.
3. El-Bahey, S., Bruneau, M., "Bridge Piers Having Structural Fuses and Bi-Steel Columns I: Experimental Testing," ASCE Journal of Bridge Engineering, Vol.17, No.1, pp. 25-35, 2012.
4. El-Bahey, S., Bruneau, M. "Bridge Piers Having Structural Fuses and Bi-Steel Columns II: Analytical Investigation," ASCE Journal of Bridge Engineering, Vol.17, No.1, pp. 36-46, 2012.
5. Bruneau, M., El-Bahey, S., Fujikura, S., Keller, D. "Structural Fuses and Concrete-Filled Steel Shapes for Seismic-and Multi-Hazard Resistant Design ," Bulletin of the New Zealand Society for Earthquake Engineering Inc., vol. 44, No. 1, pp. 45-52, 2011.
6. El-Bahey, S., Powell, S., B., Bruneau, M. "Experimental Testing of Buckling restrained Braces Having Short Yielding Core Length," AISC Engineering Journal, (Submitted).
7. El-Bahey, S., Bruneau, M."Investigation of Steel Plate Shear Links as Structural Fuses I: Experimental Testing," ASCE Journal of Bridge Engineering, (In preparation for submission for review and possible publication).
8. El-Bahey, S., Bruneau, M."Investigation of Steel Plate Shear Links as Structural Fuses II: Analytical Investigation," ASCE Journal of Bridge Engineering, (In preparation for submission for review and possible publication).

Publications in refereed conference proceedings

1. El-Bahey, S., Bruneau, M., "Structural Fuse Concept for Bridges," International Conference in Commemoration of the 10th Anniversary of the 1999 Chi-Chi Earthquake, Taiwan (September 2009).
2. Bruneau, M., El-Bahey, S., Fujikura, S., Keller, D. "Structural Fuses and Concrete-Filled Steel Shapes for Seismic-and Multi-Hazard Resistant Design ," New Zealand Society for Earthquake Engineering 2010 Conference, New Zealand (April 2010).
3. El-Bahey, S., Bruneau, M., "Structural Fuse Concept for Bridges," 9th U.S. National and 10th Canadian Conference on Earthquake Engineering, Toronto, Canada (July 2010).

Samer M. El-Bahey, Ph.D.

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Publications (cont.)

4. El-Bahey, S., Bruneau, M., "Analytical Development and Experimental Validation of a Structural-Fuse Bridge Pier Concept," 8th International Short And Medium Span Bridges Conference," Niagara Falls, Canada (August 2010).
5. El-Bahey, S., Bruneau, M., "Structural Fuse Concept for Bridges," 7th International Bridge Engineering Conference, San Antonio, Texas (December 2010).

Technical Reports

1. El-Bahey, S., Bruneau, M., "Analytical Development and Experimental Validation of a Structural-Fuse Bridge Pier Concept," Technical Report MCEER-10-0005, MCEER, University At Buffalo, Buffalo, NY.

Samer M. El-Bahey, Ph.D.
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Apostolos (Paul) Karavoussianis

Education

B.Eng. - Concordia University, Montreal, Canada - 1987

Professional Registration

Commonwealth of Massachusetts - E.I.T. - 1993

Professional History

Stevenson & Associates Inc., Woburn Massachusetts

Senior Consultant, 2011 – Present

Project Manager, 2004 – 2011.

Project Engineer, 1993 – 2004.

Badger Engineering, Cambridge Massachusetts

Structural Engineer, 1991 – 1993

NLK – Celpap Canada Inc., Montreal Quebec

Structural Engineer, 1988 – 1991

Professional Experience

Mr. Karavoussianis has twenty-four years of experience in analysis and design of nuclear and heavy industrial facilities, semiconductor fabrication, petrochemical process plants, and pulp and paper mills.

Currently, he serves as the S&A Senior Consultant on the Seismic Fragility Assessment project at Palo Verde. The project evaluates non-class 1 seismic equipment and attached piping using the IPEEE walk-down and analysis methodologies as described in the EPRI NP-6041-SL Report. He serves as a member of the walk-down team and reviewer/approver of the fragility evaluations.

As a qualified Seismic Capable Engineer (SCE), he recently performed seismic walk-downs at Vogtle Electric Generating Plant (VEGP) for Southern Nuclear Company (SNC) as a member of the project's Seismic Review Team (SRT). These seismic IPEEE walk-downs were performed in accordance with EPRI NP-6041-SL guidelines.

Apostolos (Paul) Karavoussianis
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Professional Experience (cont.)

Previously, he served as the S&A Senior Consultant and Project Manager for the multiple Palo Verde Security projects. The projects cover all aspects of the regulatory requirements for security design from computer and perimeter protection upgrade, blast evaluations, installation of BREs, VBS fortification, building fortification including the development of all modification packages for installation.

He has served as the S&A Project Manager and supports both managerial and design efforts at the Kewaunee Power Station on multiple projects that include Auxiliary Feedwater flow control modifications, Auxiliary Feedwater flow monitoring instrumentation modifications, and Auxiliary Building roof modifications. He is qualified in the Modification Process and has performed as a Responsible Engineer in various KPS projects.

He has also served as Project Manager for the Kewaunee and Wolf Creek Security projects. Both projects were approximately \$1 million projects covering all aspects of the security design from blast evaluations to installation of BREs, VBS fortification, building fortification including the development of all modification packages for installation.

He was project manager for the calculation index project for Millstone 2 & 3, which was a document management effort that spanned 3 years at a cost of over \$2 million dollars. He developed the INDEX software package, which is used to capture and maintain the document attributes. This project was expanded to include Millstone procedures, DCNs, PDCRs, original specifications and technical vendor manuals.

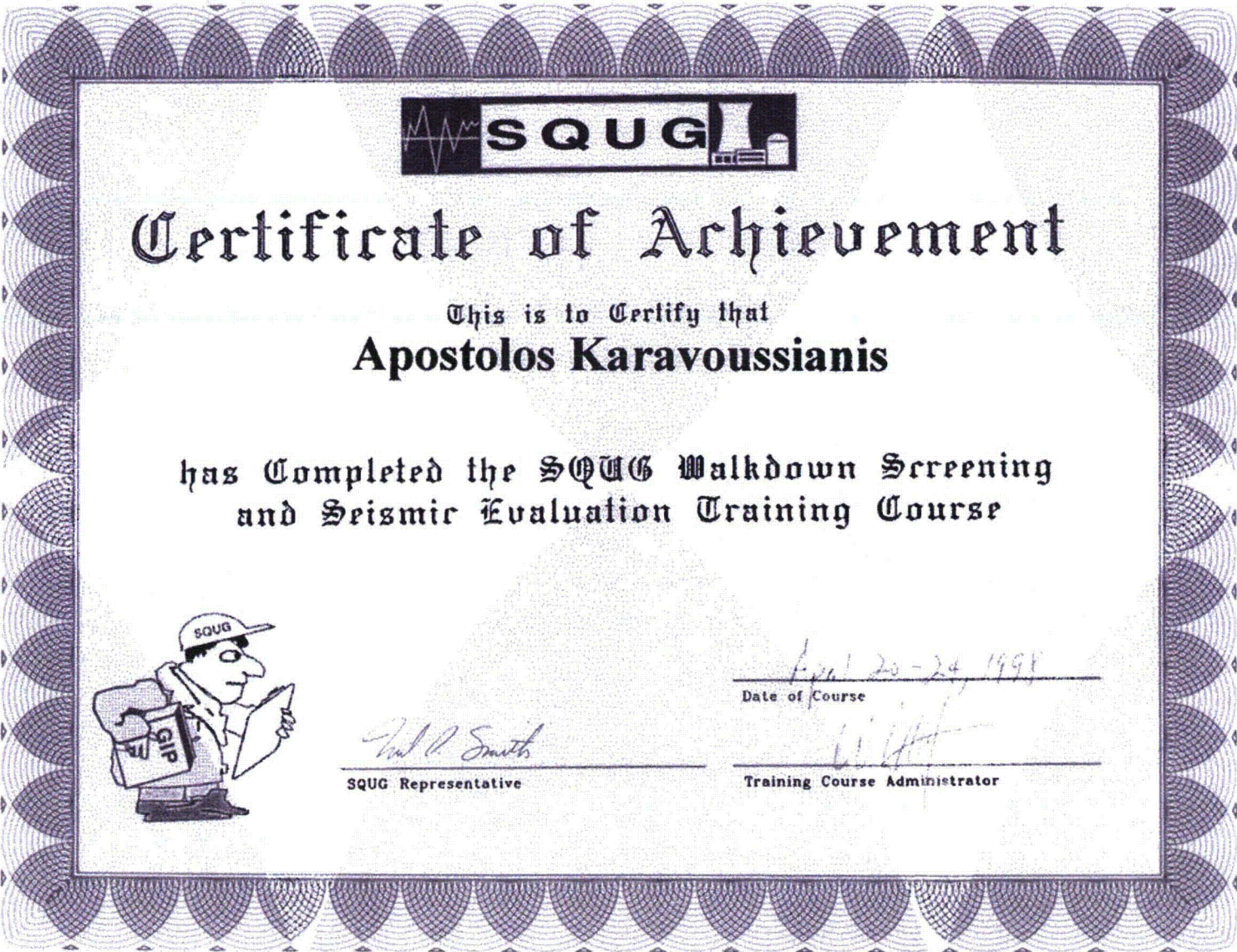
He has performed analysis in accordance with the Generic Implementation Plan Procedure, an industry program for seismic verification of nuclear power plant equipment. These analyses have included equipment and tank anchorages and limited analytical review of selected cable tray and conduit raceways. He has performed analysis of electrical and mechanical components, and tanks, for ultimate seismic performance levels in conjunction with seismic Probabilistic Risk Assessments, and Seismic Margin Assessments.

While on field assignment at Millstone 2 & 3 he worked on SQUG/A-46 issues, tank evaluations, structural dynamic analyses, piping stress, MOV and support analyses, design change notices and modifications, calculation change notices, and condition report (CR) assessments and dispositions.

Previous to his employment at S&A he has performed detailed design and analysis for various structures and their foundations. The structures were primarily steel with various concrete foundations, such as soil bearing footing, piles and rock anchor supports.

Additionally, he spent 5 months on a paper mill construction site as the resident Structural Engineer. During this period he had the responsibility of supervising various trades, implementing design changes and verifying work orders.

Apostolos (Paul) Karavoussianis
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Terry M. Keller

Principal Engineer, Risk Applications and Methods II
Westinghouse Nuclear Services Division

Education

B.S. Mathematics California State University at Sacramento

Summary

Over 20 years of experience in the nuclear energy industry, including 4 years at Westinghouse and 15 years at General Electric.

Westinghouse Electric Company, San Jose, CA

Ms. Keller joined the Risk Applications and Methods II group of the Systems & Risk Applications Engineering Department of Westinghouse's Nuclear Services Division in December 2011. Since then:

- She has been a major contributor to the multi-task ABWR Design Certification Renewal PRA project which has been successfully completed for Toshiba's June 2012 submittal to the NRC.
- She supported the Comanche Peak PRA model basic-events-to-plant-component-mapping database validation of Unit 1 and development of Unit 2 databases.

From February 2008 to December 2011 Ms. Keller worked in the Containment and Radiological Analysis group of the Safety Analysis & Licensing Department of Westinghouse's Nuclear Services Division. She performed offsite dose radiological analyses for design basis accidents for the ABWR and PWRs. She also expanded her expertise to include performing steam generator tube rupture margin-to-overfill analyses.

GE Hitachi Nuclear Energy, San Jose, CA

Ms. Keller's work at General Electric included:

- Performing dose evaluations and radiation shielding analyses for the ABWR Advance Study Programs.
- Performing transient, loss-of-coolant accident and containment analyses for BWR Plant Upgrade Projects.
- As a Data Management/Operations Support Engineer for the Suction Strainer Engineering group, oversaw Corrective Action Requests (including writing root cause analyses), learned new software and database tools and then implemented them for the team, coordinated and provided direction for composing and updating engineering technical documentation.

Ms. Keller also worked as a software engineer in both the nuclear industry (S. Levy Inc. (a Scientech Inc. Company)) and in the semiconductor industry (Applied Materials).

Derek J. Seaman

Education

W.P. Carey School of Business at Arizona State University, Tempe, Arizona – May 2011
Master of Business Administration, Finance Emphasis

Oregon State University, Corvallis, Oregon – December 2005
Bachelor of Science, Nuclear Engineering

Professional Experience

Senior Engineer, Westinghouse Electric Company June 2009 – Present

Major Responsibilities

- Manage final-stage engineering projects as part of multi-million dollar nuclear fuel campaigns. Includes attending senior management meetings and coordinating efforts of an 8 engineer team.
- Quantify equipment risk by performing plant walkdowns and developing risk assessments.
- Rotate through various plant outage positions to learn multiple aspects of refueling outages and work with systems hands on.
- Conduct reload engineering analyses to ensure safe implementation of core designs.
- Perform apparent cause analyses to correct plant issues and prevent recurrence.

Accomplishments

- Authored, reviewed and mentored all aspects of the nuclear fuel reload process.
- Successfully project managed multiple fuel reload campaigns with fuel valued over \$100 million.
- Modeled multiple reloads analyses in SIMULATE under customer's quality program.
- Analyzed fuel CRUD load to support lowering plant operating pressure which helped result in saving an unnecessary plant shutdown.
- Performed and implemented multiple corrective actions to correct quality and non conforming errors.

Derek J. Seaman
Page 2

Professional Experience (cont.)

Engineer, Westinghouse Electric Company February 2006 – June 2009

Major Responsibilities

- Evaluate power increase proposals from a safety analysis perspective to enable power utilities to generate additional revenue.
- Create monthly budgets and acquire necessary funding from management to resolve quality related rework within the engineering organization as part of customer focus.
- Analyze system and human performance failures as an apparent cause investigator and provided innovative plans to prevent reoccurrence.

Accomplishments

- Designed and implemented a quality assurance metrics system decreasing quality related costs saving nearly \$100K in first year group implementation and improving customer relations.
- Managed group's quality assurance and implemented corrective actions to reduce quality related errors by nearly 8% in the first year.

Professional and Community Relations

Team Captain, American Cancer Society Climb to Conquer Cancer – 2008-Present

- Planned and organized 9 climbs raising over \$40,000 to fight cancer.
- Worked with company executives to improve company visibility in the community.

Volunteer, Phoenix Baptist Hospital –2007-2008

Policy Chairman, North American Young Generation in Nuclear (New England Chapter) – 2006-2007

Curtis J. Stundebeck, PE

Education

University of Missouri-Columbia

Bachelor of Science Degree-Civil and Environmental Engineering, 12/01

Bachelor of Science Degree-Agricultural Engineering, 12/01

Master of Science Degree-Civil and Environmental Engineering, 5/07

- Worked as a Research and Teaching Assistant while completing Masters Degree, 01/02 – 06/04
- Developed research project partially funded by a Portland Cement Association Fellowship
- Built testing equipment and performed tests for strength and durability of High Performance Concrete
- Registered Professional Engineer - Missouri
- Chi-Epsilon-Civil Engineering Honor Society
- Tau Beta Pi-Engineering Honor Society
- ASCE Student Chapter Member

Experience

Career Engineer – Civil Design 04/07-Present

Ameren Missouri – Callaway Plant, Fulton, MO

- Complete periodic structural inspections of nuclear plant structures in the Maintenance Rule Program
- Civil and structural engineering related design evaluations, modifications, and calculations
- Involved in seismic design of nuclear safety related equipment and structures
- Specification and review for qualification of seismically qualified equipment
- Containment in-service inspection programs in accordance with ASME Section XI code requirements

Civil Design Engineer 06/06-04/07

Shafer Kline & Warren, Columbia, MO

- Structural design of commercial steel, concrete, masonry, and wood structures and foundations
- Code review, lateral design, structural analysis of all building components, and foundations
- Communicated closely with architects, contractors, other engineers, and in-house drafters in the development of design calculations and detailed construction drawings
- Site-civil design including preparation of drawings and specifications for grading and drainage, water distribution, and sanitary and storm sewer piping

Civil Design Engineer 06/04-05/06

SGT, Callaway Unit 1 Steam Generator Replacement Project, Fulton, MO

- Development of modification packages, calculations, and drawings as well as field support for construction of steel frame buildings, a cast in place concrete structure, and a heavy haul road and river docking facility in support of Callaway steam generator replacement
- Worked with construction personnel and client representatives in execution of structural steel platform modifications, piping, pipe supports, steam generator supports, and numerous heavy rigging, handling, and transportation activities during Callaway steam generator replacement

Curtis J. Stundebek
Page 2



Certificate of Completion

Curtis Stundebek

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

July 11, 2012

Date

A handwritten signature in black ink, reading "R.P. Kassawara", is positioned above the printed name and title.

Robert K. Kassawara
EPRI Manager,
Structural Reliability & Integrity

Randall W Wilson, PE, PLS

Education

BSCE University of Missouri-Rolla 1979

Experience

1979-1982 Missouri Public Service Commission

Utility Engineer

1982-2002 Harms, Inc. Civil Engineering and Land Surveying Consulting Firm

Principal Project Engineer responsible for projects including surveying, site development, structural design and utility development.

2002-2012 Ameren Missouri-Callaway Plant

Civil Structural Design Group at Nuclear Power Plant. Responsible for plant support of Civil/Structural issues. Plant representative with Seismic Qualification Reporting and Testing Standardization (SQRSTS). Snubber Program Owner.

Professional Associations

Professional Engineer, State of Missouri

Professional Land Surveyor, State of Missouri

Member National Society of Professional Engineers

Member Missouri Society of Professional Engineers

Member Missouri Association of Professional Land Surveyors



Certificate of Completion

Randall Wilson

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

July 11, 2012

Date

Robert K. Kassawara
EPRI Manager,
Structural Reliability & Integrity

Peer Review Team Résumés

Monzer M. Allam

Civil/Structural Engineer

Education

Lebanese University – B.S. Civil Engineering

University of North Carolina at Charlotte – M.S. Civil Engineering, M.S. Business Administration

Professional Experience

Westinghouse Electric Company, Charlotte, NC

Supervisory Civil/Structural Engineer

2011 – Present

- Discipline Lead providing daily engineering oversight for modification projects
- Developing staffing plans, schedule activities, budgeted hours, and project control tools for modifications projects at VC Summer Nuclear Plant.
- Mentoring and providing knowledge transfer to less experienced engineering personnel.
- Supervising direct day-to-day activities of engineering staff and performing reviews of their engineering deliverables

URS Energy & Construction, Charlotte, NC

Supervisory Discipline Engineer

2008 – 2011

- Led the detail design efforts for the Ultimate Heat Sink related structures for the US-APWR – North Anna 3 Nuclear Power Plant.
- Led the structural work for various operating plants modification projects in Brunswick and Robinson Nuclear plants.
- Developed staffing plans, schedule activities, budgeted hours, and project control tools for modifications projects at various operating plants. Developed proposals and estimates for the Structural Group in support of the Operating Plants Services Group.
- Led the design repair efforts in Crystal River 3 Nuclear Power Plant – Containment Delamination Repair Project; efforts included containment shell design for delaminated area, containment liner evaluation for the delamination repair, evaluation of the area for creep effects, thermal effects on the repair design, anchorage design, modulus of elasticity sensitivity analysis and design drawings, provided technical support for responses to NRC site inspection team requests and technical expertise in interpreting the plant FSAR.
- Developed a finite element model for the Ultimate Heat Sign Structure for the US-APWR Project – Mitsubishi Heavy Industry. Prepared and reviewed design specifications including prestressing system, reinforced steel, as well as concrete specifications. Developed and reviewed project design basis document and design criteria documents. Provided technical quality reviews for the PCCV Design Report and other Mitsubishi documents.

Monzer M. Allam
Page 2

Professional Experience (cont.)

URS Energy & Construction, Charlotte, NC
(cont.)

- Provided engineering technical quality reviews for Sequoyah Steam Generators Replacement Projects. Work included qualification of steam generators off-loading ramp support, evaluation of steam generators' outside lift system for seismic and wind/tornado loads, and evaluation of the containment dome for the openings' closure assemblies.
- Provided reviews for Waterford Steam Generators Replacement Project. Work included preparation and review for calculations related to the evaluation of loads on the containment structure.
- Performed structural analysis and design for a steam generator replacement project and TMI Nuclear Plant. Work included preparation and review for calculations related to qualification of outside and inside hatch transfer systems, tendons work platforms, heavy haul road, project technical evaluation document, closure formwork, work platforms, J leg lifting design, and review of vendor's drawings.
- Mentored entry level engineers on the analysis/design of concrete structures using ANSYS.
- Tracked budgeted and actual hours for all assigned tasks.

Shaw Group, Inc., Charlotte, NC
Lead Structural Engineer

2008

- Led and reviewed all structural activities related to AP1000 Project – Vogtle Units 3 & 4.
- Managed weekly schedule deliverables and provided schedule updates/changes to meet the engineering sequence of activities and the project milestones.
- Assigned work activities to engineers according to available resources and to the schedule milestones.
- Tracked budgeted and actual hours for each schedule activity in order to evaluate the SPI for the structural activities.
- Managed the civil specifications work activities and reviewed engineering specifications, design criteria, and all structural calculations related to Vogtle Unit 3 & 4 Project.
- Mentored engineers on the analysis/design of steel and concrete structures using the finite element software GTSTRUDL and according to the IBC Code.

Monzer M. Allam

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Professional Experience (cont.)

AREVA NP, Inc., Charlotte, NC

Structural Engineer IV

2004 – 2007

- Performed drop analyses and design for reactor heads' shielding packages using ANSYS.
- Conducted stress analysis for various nuclear plants' structural members in response to seismic load using finite element analysis software (ANSYS).
- Led the analysis, design, and design change package development effort for the old steam generator storage facility at Diablo Canyon Power plant using GTSTRUDL and according to CBC 2001.
- Led the analysis, design, and design change package development effort for the outside lift system and platforms foundation for the Steam Generators Replacement Project at Diablo Canyon.
- Reviewed several calculations for the outside lift system, outside platform system, and the transport saddles for the Steam Generators Replacement Project at Diablo Canyon.
- Originated and reviewed various critical section calculations in the Evolutionary Pressurized Reactor (EPR) Project using ANSYS 10.0 and according to the requirements of ACI 349/ ACI 359.

University of North Carolina at Charlotte, Charlotte, NC

Research Assistant

2003 – 2004

- Post-cracking analysis of a rectangular laminated glass plate simply supported on all edges in response to uniform pressure loading using finite element analysis software (ANSYS 6.1).
- Built a model for a laminated glass plate capable of generating load-deflection curves after first cracking of the glass.
- Searched all relevant theories about laminated glass and non-linear plate analysis.

Naamani Design & Construction Co., Beirut, Lebanon

Design Engineer

1999 – 2000

- Completed the design of two zones of the Lebanese University Project, using ACI code and "EFFEL" Structural Analysis software.
- Developed shop drawings for concrete structures using AutoCAD 2000.
- Reviewed and adjusted structural/architectural plans based on structural design requirements.

Monzer M. Allam
Page 4

Professional Experience (cont.)

Bouygues Lebanon, Beirut, Lebanon

Quality Control Engineer

1998 – 1999

- Provided quality control for reinforcement and casting of concrete caissons in “Beirut sea front project.”
- Supervised the implementation of all caissons off shore in “Beirut sea front project.”
- Generated spreadsheets to organize the topographical work.
- Scheduled and supervised all topographical work on shore.

Karagulla for Engineering and General Contracting, Beirut, Lebanon

Engineer in Training

1998

- Supervised Jacketing work in the rehabilitation project of “Phoenicia Intercontinental Hotel.”
- Estimated and computed the cost for all jacket work. Drafted and organized the work schedule. Submitted daily report of the project site activities.

Certifications or Professional Membership

- 2011 Engineer of the Week Award – URS Corporation
- Bonus Award for Outstanding Performance in Vogtle AP100 Project – Shaw Group
- Core Award for Achievements in the EPR Project – AREVA
- Engineer of the Month and Core Award for Achievements in Diablo Canyon SGRP – SGT
- American Concrete Institute (ACI): – Member 2003-2009
 - Committee Member-ACI 349, 2009-present
 - Committee Member – ACI 355, 2009-present
- American Institute of Steel Construction (AISC), Member 2005-present
- American Society of Civil Engineers (ASCE), Member 2004-present
- PE License in North Carolina, License # 034385
- NCEES Record Established for Case of PE License Reciprocity
- Fluent in three languages

Todd A Bacon

Education

1976 – 1980 University of Illinois – Urbana-Champaign
Bachelor of Science – Civil Engineering

Registration/Certification

Professional Engineer: California License No. C-0336104 (Civil), Georgia License. No. 015562, Ohio License No. E-57497

Professional History

2012 – Present Stevenson & Associates, Charlotte, North Carolina, Senior Consultant and General Manager, Charlotte, NC Office

1980 – 2012 AREVA Inc., Charlotte, NC, Engineering Manager

Professional Experience

Mr. Bacon has thirty years of experience in the design and modification of mechanical and structural systems. His responsibilities as an Engineering Manager have included work from the conceptual design through to the installation support phases of projects. Mr. Bacon has served as Project Engineer and Project Manager for numerous work scope efforts, including coordination of personnel in multiple locations. The efforts have also included significant client and/or regulatory interface, as required. These activities have also included responsibility for budgets, schedules and the technical accuracy of work performed. In addition, he has extensive experience in proposal and report development, as well as personnel training activities.

Mr. Bacon's work has involved extensive use of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, including various piping system related committees. These have included the design group for the HDPE buried pipe group of Section III, and the Flaw Analysis group of Section XI. Other Code experience includes the American Institute of Steel Construction (AISC), American Concrete Institute (ACI), and ASME (ANSI) B31.1 and B31.3 codes. He serves on the AREVA College of Experts in the areas of structural and dynamic analysis and is also fluent in using numerous piping and finite element computer programs, as well as in typical frame analysis programs.

Todd A Bacon
Page 2

Professional Experience (cont.)

***Engineering Manager, Civil and Layout Department
AREVA NP Inc.***

Mr. Bacon served as an Engineering Manager in the Civil and Layout Department in Charlotte, North Carolina. In this role he was responsible for the efforts involving work on the 3D model for an AREVA US EPR plant being designed for the Calvert Cliffs site in Maryland. His areas of responsibility also included the balance of plant piping system design efforts for the plant. In this role, he was involved with interfaces with numerous groups utilizing the 3D model information, as well as consortium partner Bechtel Power, and AREVA offices throughout the US and Europe who served as subcontractors for various portions of the overall project scope of work. This included coordinating the efforts of approximately fifty individuals for these efforts involving technical resolution of issues, manpower planning, personnel issues, and development of the group.

In addition to the managerial responsibilities, he was a member of the AREVA College of Experts in the area of mechanics and fluid mechanics. This group was comprised of approximately one percent of the company worldwide which served as the technical leaders for the company, sharing best practices and knowledge throughout the global organization.

In addition to the New Plants activities in the US, Mr. Bacon supported efforts involving current activities for the International Thermonuclear Experimental Reactor (ITER) effort in which AREVA had the responsibility for the Cooling System involving the piping system evaluations and development of Technical Guides and impact to the building resulting from the piping system.

He previously served as an Engineering Manager in the Structural and Engineering Mechanics Group, working on projects involving operating plants. As a Project Engineer and Manager, he held responsibility for leading project teams in technical areas, as well as in budget and schedule item tracking functions.

Examples of typical projects include the following:

Mixed Oxide (MOX) Fuel Fabrication Facility, Savannah River Site – Conducted third party review of overall project identifying ways to achieve efficiencies and improve production rates for the building design and construction effort. This resulted in numerous recommendations for the site to improve production in the areas of scheduling, group interfacing (engineering disciplines, construction, etc.), procedural development as well as improvements through procedural revisions. This also included performing as the lead engineer on projects for the facility involving development of procedures for field routing of small bore piping systems, as well as conduit runs.

Todd A Bacon

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Professional Experience (cont.)

ECCS Debris Blockage Issue, Tokyo Electric Power Company (TEPCO) – Established contact and led proposal efforts to obtain contracts for ECCS suction strainer replacements for first plant performing this scope in Japan. Subsequently won contracts for two additional TEPCO units as well, resulting in \$ 8M in revenue for AREVA. This work involved extensive interface and oversight of the strainer hardware vendor during the design, fabrication and construction phases of the projects.

ASME BPVC Work, Various Facilities – Served in positions of increasing responsibility performing and reviewing ASME Boiler and Pressure Vessel Code work in the Structural and Engineering Mechanics Group. Work included Class 1 analyses of flued heads, mechanical equipment evaluations and numerous piping system analyses.

ECCS Debris Blockage Issue, involving numerous US BWR clients – Served in various roles including Project Engineer, Project Manager, and Technical Consultant. Had a significant amount of involvement with this issue including involvement with the BWR Owner's Group for this issue spanning numerous years.

GL 96-06 Operability and Design Basis Resolution, Oconee Nuclear Station, Duke Power – Served as the Project Engineer for the Operability Evaluation for the Oconee Nuclear Station in an effort to show all three units operable under the additional loadings resulting from the USNRC Generic Letter. This assessment included evaluation of the LPSW system, including piping, supports, equipment nozzles, as well as structural platforms and associated components. In addition, operability guidelines were developed for Oconee during this effort.

Reactor Cavity Drain Line Modifications, Palisades Nuclear Power Plant, Consumers Power – Project Manager for the Reactor Cavity Drain Line modifications and letdown piping support modifications at the Palisades Plant. Work scopes included both engineering functions and the generation of modification package paperwork.

NRC Bulletin 79-14 Large-Bore Piping Project Evaluation, D. C. Cook Nuclear Power Plant, Indiana/Michigan Power – Work included serving as Project Engineer to evaluate the adequacy of D.C. Cook's NRC Bulletin 79-14 Large-Bore Piping Project. The work scope involved supervising a project team performing piping and piping support evaluations. Conclusions drawn from this study have enabled the client to realize significant cost savings during recent maintenance outages through discrepancy trending and margin assessment studies.

Reactor Pressure Vessel Bottom Head Drain Line Unplugging Project, Dresden Nuclear Generating Station Units 2 & 3, Commonwealth Edison. Included serving as Project Engineer responsible for unplugging reactor pressure vessel bottom head drain lines for Dresden Units 2 and 3. This project was successfully completed within schedule and budget constraints, and also was part of the Unit 2 critical path outage work.

Todd A Bacon
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Professional Experience (cont.)

HPCI System Sparger Modification, Quad Cities Nuclear Generating Station, ComEd – Served as the Structural and Engineering Mechanics Project Engineer and Manager for Quad Cities Unit 1 and 2 high pressure coolant injection (HPCI) system modification, which resulted in the addition of a sparger assembly inside the torus. The project also included the addition of platforms to provide accessibility for personnel performing maintenance activities at both units.

Hardened Wetwell Vent Project Third Party Reviews, Dresden and Quad Cities Nuclear Generating Stations, ComEd – Led the third party reviews of the hardened wetwell vent projects for the Dresden and Quad Cities stations. These projects involved the evaluation of existing, as well as new, piping and auxiliary steel. Design codes used for the mechanical work included ASME Section III, Subsections NC, ND, NE and NF, as well as AISC and Uniform Building Code (UBC) standards for the structural evaluations.

Structural Projects, Various Facilities – Past projects have included extensive structural experience, such as the Hope Creek Nuclear Generating Station's drywell inner water seal plate analysis, and also Mark I piping and pipe support evaluations. Previous work also included extensive experience working on various mechanical and structural design projects.

Licensing and Special Projects, Comanche Peak Steam Electric Station, TU Electric – Involved in licensing and special studies projects for the Comanche Peak Station.

SSFI Audit Responses, ComEd – Participated in responding to concerns raised during safety system functional inspection (SSFI) audits.

Project Summary Reports and Operability Guidelines, ComEd and AEPSC – Wrote numerous project summary reports and operability guidelines for Commonwealth Edison (ComEd) and American Electric Power Company (AEPSC).

Piping, Piping Support and HVAC Modifications, Various Facilities – Served as Project Engineer for piping, piping support and HVAC modification work for various nuclear plants, including Dresden Units 2 and 3, Quad Cities Units 1 and 2, D. C. Cook Units 1 and 2, and Duane Arnold. Project Engineer responsibilities included coordinating schedule and budget issues, as well as addressing technical questions as they arose.

Control Rod Drive Frame Analysis, Browns Ferry Nuclear Power Plant, Tennessee Valley Authority (TVA) – Involved in the analysis of the control rod drive frames for the Browns Ferry Plant.

Steven K. Sherfey P.E.

Principal Civil Engineer

Experience

Principal Engineer at Westinghouse (Chattanooga, TN)

6/2008 – Present

New Plant Design for AP1000. Analyzed and structurally qualified Mechanical Modules, shipping containers, and pipe supports to AISC and ASME Section III NF requirements for structural steel; analyzed and qualified the PaR Fuel Handling Machine Crane, mechanical wall penetrations, non-standard embedded plates, and various piping systems.

V.C. Summer Nuclear Plant. Designed and Structurally Qualified new Auxiliary Building Lift and replacement PaR Fuel Handling Building Crane Trolley; reanalyzed service water piping for field modification; provided onsite design engineering outage support in spring of 2011; verified many design modification packages.

Calvert Cliffs Nuclear Plant. Prepared two Civil Design Calculations to qualify a new SFP floatable platform and to qualify the existing rails and structural concrete for the significantly increased weight of the replacement PaR Spent Fuel Handling Machine.

Palisades Nuclear Plant. Prepared Civil Design Calculation to qualify new MSR Relief Valve Header Support and new loads on existing structural steel in the Turbine Building.

APS Palo Verde Nuclear Plant. Reviewed and Verified ASME Section III piping and support evaluations for the Simplified Head Assembly modification; also verified Cofferdam Design for the essential spray ponds.

Callaway Nuclear Plant Unit 1. Reviewed and Stamped ASME Section III Class 1 Piping Analysis Calculations and Design Specifications.

North Anna Nuclear Plant. Reviewed and Stamped ASME safety related piping Design Specifications.

Japan's Tomari Unit 1. Provided guidance and recommendations for the rigging plan of the Steam Generator Hot Leg Elbow Replacement modification.

Supervising Structural Engineer at WorleyParsons (Chattanooga, TN)

2007 – 6/2008

Georgia Power Scherer Unit 2 and 3 SCR Additions. Analyzed and modified existing ducts to consider changes to internal pressures. Analyzed and modified existing structural duct support steel because of increases in duct loads. Performed ANSI B31.1 analysis on large bore high temperature piping; qualified piping to pipe stress allowables and located all pipe supports using AutoPIPE XM and PDS.

Clarksville Nyrstar Zinc Plant. Worked on site and wrote technical specifications for twelve major capital project upgrades which involved all disciplines of civil, mechanical, and electrical. Generated Requests for Quotes and met with vendors and site personnel in order to establish design requirements.

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Experience (cont.)

Alstom, Iatan Fossil Project. Analyzed and modified the existing boiler building using STAAD-Pro and hand calculations in order to provide major structural design changes to incorporate the selective catalytic reduction (SCR) duct tie-in addition to the existing plant. Principal engineer for the existing plant modifications.

***Senior Civil/ Mechanical Engineer at TVA (Chattanooga, TN) – contract through RRC and ESI
2001 – 2007***

For the TVA fossil plants, I performed structural calculations, designed and sketched trenches, retaining walls, ramps, pipe supports, platforms, monorails, footings, temporary supports, building modifications, etc. Performed mechanical and civil project engineer responsibilities for the SCR balance-of-plant (BOP) fossil plant designs and performed high energy piping/support walkdowns at the fossil plants to identify needed repairs. Gathered data and set up database for all 59 TVA fossil plants for performing flow accelerated corrosion (FAC) studies. At the Browns Ferry Nuclear Plant in Athens, AL, I originated and revised nuclear design calculations and drawings for safety-related piping (using TPIPE), cable tray supports, and control room panels. This included the initiation, generation, and issuance of advanced authorized design change notifications. At BFN I also performed civil engineering evaluations of rigging plans for reactor building and turbine building lifts, performed field engineering duties such as the implementation, revision, and closure of plant modification and maintenance work orders for various piping and structural systems.

***Senior Civil/Mechanical Engineer at ICR Engineers (Chattanooga, TN)
1996 – 2001***

Duracell Battery Cathode Building. Analyzed and designed structural and mechanical systems for the building expansion per SBCCI standards. This encompassed the design of masonry, spread footers, baseplates, anchor bolts, roofs, floors, columns, mezzanines, equipment supports, piers, plumbing, drainage, and heating/ventilating/air-conditioning.

U.S. Pipe, McKee Foods, Metal Systems, several commercial building projects, banks, insurance companies, and home owners. Responsible for designing and qualifying structural and mechanical systems for new and modified buildings. Performed inspections of structural problems and provided recommended corrective actions.

Northeast Nuclear Energy Company, Millstone Nuclear Power Station. Performed structural inspections and oversaw the Maintenance Rule program for structures to ensure 10CFR50.65 compliance; revised various structural inspection procedures; generated/resolved engineering work requests, adverse condition reports, temporary modifications, technical evaluations, and action requests related to structures. Performed structural and mechanical system readiness reviews to support plant restart. Reviewed changes to the final safety analysis report (FSAR) to re-establish the licensing basis per 10CFR50.54(f).

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Experience (cont.)

***Senior Structural/Mechanical Engineer – short term contract jobs through
Martin-Williams, Bechtel, S&W, PME, and Raytheon Nuclear
1993 – 1996***

Connecticut Yankee Nuclear (Haddam Neck, CT). Completed writing procedure and performed structural inspections for “Condition Monitoring of Maintenance Rule (10CFR50.65) In Scope Structures.” Also performed inspections of scaffolding, ladders, crane lifts, and lift rigs. Procured material (hoists, slings, paint, swivel rings, motors, etc.) to support plant work. Performed equivalency evaluations for replacement parts/components.

Hope Creek Nuclear Station (Salem, NJ). Represented design engineering in resolving modification and installation problems. Revised design change packages in order to resolve procedural and installation discrepancies.

PME Engineering (Columbia, TN). Performed environmental site assessments per ASTM E1527. Inspected mechanical and structural concerns of industrial and residential buildings. Performed plumbing, mechanical, and structural design of industrial and commercial facilities per the SBCCI Standard Codes.

TVA, Sequoyah/Watts Bar Nuclear Plants (Chattanooga, TN). Performed complete ASME piping analysis and documentation on many piping subsystems, and updated isometric drawings and calculations to the latest criteria and procedures. Closed SQN Lessons Learned issues at Watts Bar Nuclear Plant.

Carolina Eastman Chemical (Columbia, SC). Performed qualification, routing, and supporting of chemical plant piping per ANSI B31.3 code (using CAESAR II). Originated, checked, and worked with process and instrumentation diagrams, piping layout drawings, and piping isometrics, having verified their accuracy in regard to pipe flow, size, ANSI code compliance, as-built configuration, line specifications, equipment connections, and valve types.

TVA, Bellefonte Nuclear Plant (Scottsboro, AL). Oversaw and assessed the technical adequacy of mechanical and civil engineering work performed by the prime contractor, and performed technical reviews on installation criteria for field supported lines, buried piping criteria, and rigorous analysis criteria.

***Principal Mechanical Engineer/Pipe Stress Analyst at TVA – contract through
Gilbert Commonwealth and Ebasco
1986 – 1993***

TVA, Watts Bar Nuclear Plant Unit 1 Completion (Chattanooga, TN). Supervised, planned, and scheduled the Ebasco large bore pipe stress work. Performed qualifications by both alternate (hand calculation) and rigorous methods to ASME Section III requirements; wrote technical requirements for the procurement of nuclear and commercial grade replacement parts. (Three months of this time period spent in procurement at Calvert Cliffs Nuclear Plant).

TVA, Sequoyah Nuclear Plant Restart (Chattanooga, TN). Lead analyst in performing piping qualification per ASME Section III requirements; qualified Unit 2 deviations by hand calculation methods and Unit 1 by rigorous analysis methods. Wrote technical requirements for the procurement of nuclear and commercial grade replacement parts.

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Experience (cont.)

Research Scientist at Nichols Research (Huntsville, AL)

1985 – 1986

Performed optical analyses for various strategic defense initiative programs. Wrote FORTRAN computer code and computer program modifications. Secret clearance.

Senior Mechanical Engineer/Pipe Stress Analyst at TVA – contract through Impell, United Engineers, and C&D

1983 – 1985

TVA, Bellefonte Nuclear Plant (Scottsboro, AL). Provided piping and hanger design expertise to the Construction Hanger Engineering Unit. Performed piping analyses on Category I(L) piping in order to minimize hangers (this involved extensive walkdowns and inspections); planned and scheduled work.

TVA, Corporate Engineering (Knoxville, TN). Prepared and revised procedures, criteria, FSARs, policy statements, and calculations for the various plants.

Senior Mechanical Engineer/Pipe Stress Analyst at Gilbert/Commonwealth (Reading, PA) – contract through Omni

1980 – 1983

Performed the ASME Section III qualification (using TPIPE) of the safety-related main steam and feedwater piping for V.C. Summer Nuclear Station; analyzed all the V.C. Summer high temperature non-nuclear steam piping; lead and supervised the analysis of all Kori II high temperature sampling lines; calculated support stiffnesses for the VC Summer Westinghouse Class 1 piping analyses; also performed piping analysis on Three Mile Island using PIPDYN and the TVA Sequoyah Nuclear Plant using TPIPE.

Mechanical Engineer/Pipe Stress Analyst at TVA (Knoxville, TN)

1975 – 1980

Performed piping analysis on many different piping systems for Bellefonte Nuclear Plant; wrote and developed several FORTRAN computer programs to aid in performing piping qualification and documentation; drafted and restored TVA design drawings.

Math and Science Teacher in Tennessee Public Schools (Knoxville, TN)

1972 – 1974

Taught advanced math, geometry, general math, physics, and physical science for grades eight to twelve.

Engineering Co-op Student at Combustion Engineering (Chattanooga, TN)

1970 – 1971

Worked in the manufacturing, fabrication, and testing of piping; maintained records, read meters, and performed tests for the tube mill and mechanical maintenance.

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Education

B.S., Engineering Science and Mechanics, College of Engineering, University of Tennessee at Knoxville, 1975

B.S., Natural Science, College of Education, University of Tennessee at Knoxville, 1972

Registrations/Affiliations/Papers

- Professional Engineering Licenses
 - Alabama – License No. 17627
 - Tennessee - License No. 102880
 - Georgia - License No. PE024889
 - South Carolina - License No. 28319
 - Maryland - License No. 17966
 - Missouri - License No. 2007011074
 - NCEES – Registration No. 41731
- Registered Professional Teacher – Tennessee Certification # 482661
- Member, American Society of Mechanical Engineers – Member # 2077956
- Member, American Society of Civil Engineers – Member # 346663
- Published Papers
 - Seismic Analysis of a Nuclear Fuel Handling Machine
2012 ASME Pressure Vessel and Piping Conference
Paper # PVP-2012-78879
 - Structural Analysis of Mechanical Modules for Modular Designed Nuclear Plants
2011 ASME Pressure Vessel and Piping Conference
Paper # PVP-2011-58089