
Closeout of IE Bulletin 80-03: Loss of Charcoal From Standard Type II, Two-Inch, Tray Adsorber Cells

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PARAMETER, Inc.

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U.S. Nuclear Regulatory
Commission

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ABSTRACT

Because of concern about defective charcoal tray adsorber cells found in certain ventilation systems at the Sequoyah Nuclear Plant, the NRC/IE issued IE Bulletin 80-03 on February 6, 1980. Some charcoal cells are used in ventilation systems associated with engineered safety features, which are provided for protection from abnormal events. Others are installed to control radioactive materials during expected operations. Licensees of operating power reactors and holders of permits for those under construction were required to take specific actions. Evaluation of utility responses and NRC/Region inspection reports shows that the bulletin can be closed out by means of specific criteria for 123 (99%) of the 124 facilities with operating licenses or construction permits. A followup item is proposed for the only facility with open bulletin status, for use by the NRC in ensuring satisfactory completion of corrective action. The cells with riveted screens which were identified at Sequoyah were not found at any other facility. Although cells with miscellaneous defects were found at nine facilities other than Sequoyah, there were no charcoal problems.

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CLOSEOUT OF IE BULLETIN 80-03:
LOSS OF CHARCOAL FROM STANDARD TYPE II,
2 INCH, TRAY ADSORBER CELLS

INTRODUCTION

In accordance with the Statement of Work in Task Order 020 under NRC Contract 05-85-157-02, this report provides documentation for the closeout status of IE Bulletin 80-03. Documentation is based on the records obtained from the NRC Document Control System.

IE Bulletin 80-03 was issued on February 6, 1980, because of concern about defective charcoal tray adsorber cells found in certain ventilation systems at the Sequoyah Nuclear Plant. Some charcoal cells are used in special engineered safety feature (ESF) filtration systems. Others are installed in normal ventilation systems to control radioactive materials during expected operations, in compliance with 10 CFR 50 Appendix I. Licensees of operating power reactors were required to take four specific actions. Holders of construction permits for power reactors were required to take two specific actions.

A copy of IE Bulletin 80-03 and a synopsis of the required actions are included in Appendix A. Evaluation of utility responses and NRC/Region inspection reports is documented in Appendix B as the basis for bulletin closeout by means of specific criteria (see Page 4 of the report text). A followup item is proposed in Appendix C for use by the NRC in assuring satisfactory completion of corrective action. Abbreviations used in this report and associated documents are presented in Appendix D.

SUMMARY

The bulletin has been closed out for 123 (99%) of the 124 affected facilities. Facilities which were shut down indefinitely or permanently are not included in this closeout percentage. The detailed breakdown of bulletin closure by specific criteria (see Page 4) is as follows:

1. The bulletin has been closed out for the following four (4) facilities which were shut down indefinitely or permanently (SDI) when the bulletin was issued (Criterion 1):

| | |
|----------------|----------------|
| Dresden 1 | Indian Point 1 |
| Humboldt Bay 3 | TMI 2 |

2. The bulletin has been closed out for Big Rock Point 1 because no charcoal adsorber trays of any type are used (Criterion 2).
3. The bulletin has been closed out for the following 45 facilities where no defective tray adsorber cells were found (Criterion 3):

| | | |
|--------------------|-------------------|--------------------|
| Arkansas 1,2 | Grand Gulf 1 | Prairie Island 1,2 |
| Beaver Valley 1 | Haddam Neck | Quad Cities 1,2 |
| *Bellefonte 1,2 | *Harris 1 | Rancho Seco 1 |
| Braidwood 1,2 | Hatch 1 | Robinson 2 |
| Browns Ferry 1,2,3 | *Hatch 2 | Salem 1,2 |
| Brunswick 1,2 | Indian Point 2,3 | San Onofre 1 |
| Byron 1,2 | Kewaunee | Shoreham |
| Calvert Cliffs 1,2 | La Crosse | St. Lucie 1 |
| Catawba 1,2 | LaSalle 2 | *St. Lucie 2 |
| *Clinton 1 | Maine Yankee | Summer 1 |
| *Comanche Peak 1,2 | *McGuire 1,2 | Surry 1,2 |
| Cook 1,2 | Millstone 1,2,3 | Susquehanna 1,2 |
| Cooper Station | Monticello | TMI 1 |
| Crystal River 3 | Nine Mile Point 1 | Trojan |
| Diablo Canyon 1,2 | North Anna 1,2 | Turkey Point 3,4 |
| Dresden 2,3 | Oconee 1,2,3 | Vermont Yankee 1 |
| Duane Arnold | Oyster Creek 1 | WNP 1 |
| Farley 1,2 | Palisades | Waterford 3 |
| Fermi 2 | *Palo Verde 1,2,3 | Watts Bar 1,2 |
| *FitzPatrick | Perry 1,2 | *Yankee-Rowe 1 |
| Fort St. Vrain | Pilgrim 1 | Zion 1,2 |

*The filters used are not the type of bulletin concern, and they are not defective.

4. The bulletin has been closed out for the following 18 facilities under construction at the time the bulletin was issued and where no tray adsorber cells had been received (Criterion 4):

| | | |
|-----------------|-------------------|-----------------|
| Beaver Valley 2 | Nine Mile Point 2 | South Texas 1,2 |
| Callaway 1 | River Bend 1 | Vogtle 1,2 |
| Hope Creek 1 | San Onofre 2,3 | WNP 2,3 |
| Limerick 1,2 | Seabrook 1,2 | Wolf Creek 1 |

5. The bulletin has been closed out for the following nine (9) facilities for which satisfactory testing of replacement or repaired cells has been confirmed by an NRC/Region inspection report (Criterion 5):

| | | |
|----------------|------------------|-----------------|
| Davis-Besse 1 | LaSalle 1 | Point Beach 1,2 |
| Fort Calhoun 1 | Peach Bottom 2,3 | Sequoyah 1,2 |

6. The bulletin remains open for one facility: Ginna.
7. The 10 facilities with defective cells are identified in preceding summary items 5 and 6. The defects are described below for these facilities.

Davis-Besse 1

Barneby-Cheney Type II FC toploading cells of welded construction were used. There were no defects of bulletin concern; however, gasket compression was corrected by torquing all cell mounting nuts.

Fort Calhoun 1

The only defective cells were found in the latest shipment of 154 American Air Filter cells. Screens were spot welded at 3/4" spacing. Thirty-four (34) cells with voids were found to have loose nuts on spacer rods. Charcoal leaks were detected in six (6) cells. The leaks were caused either by handling damage to the face plate-to-screen joint, or by loose rivets of charcoal filler hole plates. According to the utility response, "Proper receipt inspection and installation procedures, in conjunction with existing surveillance tests, should ensure the operability of all the charcoal filter units." IR 80-17 dated 10-20-80 verifies that adequate corrective action was accomplished as specified.

Ginna

American Air Filter cells in the "B" Containment Purge System were being replaced although the system was still operable. Many screens were corroded. Many spacers were loose. No channeling or loss of charcoal had occurred. This item remains open pending a scheduled inspection.

LaSalle 1

A single spot weld appeared to be broken on a welded cell manufactured by the CVI Corporation. A special tool was being developed to perform a more complete inspection. A deficiency report was prepared to identify the suspected weld, and assure correction.

Peach Bottom 2,3

The rivets which retain the charcoal fill port covers of the American Air Filter Company cells were rusting. These rusted rivets were replaced with stainless steel rivets to meet the Bechtel specification. No charcoal problems were encountered.

Point Beach 1,2

One Barneby-Cheney cell was found to have a partially separated strip which secures the screen to the frame. This condition was corrected. There was no current or potential charcoal problem.

Sequoyah 1,2

The problem with Flanders Type II, pre-1974 cells was originally identified at this plant. All of these cells of concern were removed for repair or replacement. CTI filters, DT-10-Type II, Model CS-800 were borrowed to start up Unit 1. IRs 80-29 dated 09-08-80 for Unit 1 and 81-23 dated 06-08-81 for Unit 2 call the bulletin closed.

CONCLUSIONS

1. Defective tray adsorber cells were identified for replacement or repair at 10 of the 124 power facilities to which the bulletin was issued. Problems were corrected at all 10 facilities. Refer to Summary Item 7 on page 3.
2. The riveted Flanders Type II pre-1974 cells initially identified by the bulletin at Sequoyah were not found at any other facility.

REMAINING AREA OF CONCERN

Refer to Appendix C for the only proposed followup item.

CRITERIA FOR CLOSEOUT OF BULLETIN

The bulletin is closed out for facilities to which one of the following criteria applies:

1. The facility has been shut down indefinitely or permanently (SDI).
2. The response indicates that no charcoal tray adsorber cells of any type are used.
3. The response complies with required actions and indicates that there are no defective cells.

Note: From the conclusions stated above, it is clear that the problem of concern is not generic and is under control. Therefore, an NRC/Region inspection report is not required for application of Criterion 3; however, such reports are listed in Table B.1 if they were found during the document search.

4. The holder of a construction permit reports that no cells have been received.
5. The response and an NRC/Region inspection report indicate compliance with required actions and satisfactory testing of replacement or repaired cells.

Note: By a replacement cell is meant one which replaces a defective cell, not one which replaces an exhausted cell.

APPENDIX A

Background Information and Required Actions

Notes:

1. For required actions, see pages A-1 and A-2.
2. A synopsis of the required actions appears on Page A-3.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

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Page 1 of 2

LOSS OF CHARCOAL FROM STANDARD TYPE II, 2 INCH, TRAY ADSORBER CELLS

Description of Circumstances:

During preliminary leak tests of charcoal adsorber cells in certain ventilation systems at Sequoyah Nuclear Plant, it was determined that on certain adsorber cells the spacing between rivets securing the perforated screen to the casing was too great to ensure adequate contact between the casing and the screen, thus allowing charcoal to escape.

The problem was discovered when a visual inspection detected loose charcoal on the floor of the filter housings and on the outside horizontal surfaces of the adsorber cells. Loss of charcoal was also indicated by observation of light penetrating through the cells. Additional inspection revealed that the rivets securing the perforated screens to the cell casing were approximately six inches apart and the screen appeared to be sagging away from the casing between rivets.

The particular adsorber cells being tested at Sequoyah Nuclear Plant were Flanders Type II pre-1974 fabrication.

There is a possibility that design of adsorber cells with wide spacing between screen rivets may pass initial freon leak tests but degrade significantly during operation thus reducing the margin of safety during postulated accidents.

The responses from this Bulletin will be used by the NRC to evaluate need for more frequent inspection/testing.

For all power reactor facilities with an Operating License:

1. Determine if charcoal adsorber cells in use, or proposed for use, have the potential for a loss of charcoal incidental to handling, storage or use (as appropriate). Particular attention should be directed to examination of a) rivet spacing resulting in separation of screen and cell housing and b) adsorber cell or filter housing deformation causing loss of charcoal and/or channeling. Either of these items could result in a degraded filtration system incapable of performing its intended function. The preferred method of this determination is a visual inspection of the filter housing and adsorber cells as described in Section 5 of ANSI N510-1975. If this method is not feasible, state in the report required by Paragraph 4 how the determination was made.

2. For ESF filtration systems, any identified defective cells shall be replaced and the operability of the system (after cell replacement) demonstrated by leak testing within 7 days. Preferred method of leak testing is as described in Regulatory Guide 1.52 and Section 12 of ANSI N510-1975.
3. For normal ventilation exhaust filtration systems which employ charcoal adsorber cells and for which radioactive removal efficiency has been assumed in determining compliance with the "as low as reasonably achievable" design criteria of 10 CFR 50, Appendix I, any identified defective cells shall be replaced as soon as possible but at least within 30 days. After replacement, the system should be demonstrated operable by leak testing within an additional 30 days. Preferred method of testing is as described in Regulatory Guide 1.140 and Section 12 of ANSI N510-1975.
4. Report in writing within 45 days of the date of this Bulletin the results of the determination required by Paragraph 1. The report shall include the type of cells employed (manufacturer and cell design), system containing the cells, observed cell condition (degradation/sagging) and a discussion of visual inspection procedure and results.

For all Power Reactor Facilities with a Construction Permit:

1. Visual inspection shall be conducted only if the charcoal adsorber cells have been purchased and shipment received. A representative number (approximately 5) of each type of cell design/manufacturer shall be visually inspected for such deficiencies as rivet spacing and screen/casing separation which could lead to loss of charcoal incidental to handling, storage, or use.
2. Report in writing within 45 days of the date of this Bulletin the results of the inspection required by Paragraph 1. The report shall include the type of cells (manufacturer and cell design), observed cell condition (degradation/sagging) and a discussion of the inspection procedure and results.

Reports shall be sent to the Director of the appropriate NRC Regional Office listed in Appendix D of 10 CFR 20 with a copy to the Director, Division of Fuel Facility and Materials Safety Inspection, Office of Inspection and Enforcement, USNRC, Washington, D.C. 20555.

Approved by GAO, B180225(R0072); clearance expires, 7/31/80. Approval was given under a blanket clearance specifically for identified generic problems.

SYNOPSIS OF REQUIRED ACTIONS

A. For licensees:

1. Determine if cells in use, or proposed for use, have the potential for loss and/or channeling of charcoal. In particular, visually inspect items such as rivet spacing [or spacing of spot welds, tack welds, bolts] and housing deformation, preferably in accordance with ANSI N510-1975.
2. For engineered safety feature (ESF) systems, replace defective cells and leak test the replacement cells within seven days, preferably in accordance with Regulatory Guide 1.52 and ANSI N510-1975.
3. For normal systems, replace defective cells within 30 days and leak test the replacement cells within an additional 30 days, preferably in accordance with Regulatory Guide 1.140 and ANSI N510-1975.
4. Report the results in writing, including identification and description of the procedure and the cells.

B. For holders of construction permits:

1. Inspect visually about five of each type of cell already received, for rivet spacing [or spacing of spot welds, tack welds, bolts] and structural separation.
2. Report the results in writing, including identification and description of the procedure and the cells.

APPENDIX B

Documentation of Bulletin Closeout

TABLE B.1 BULLETIN CLOSEOUT STATUS

| Facility | Utility | Docket | Facility Status, 02-06-80 | NRC Region | NSSS | AE | Utility Response Date | Inspection Report and Date | Closeout Status and Criterion |
|------------------|---------|--------|---------------------------|------------|------|-------|-----------------------|----------------------------|-------------------------------|
| Arkansas 1 | AP&L | 50-313 | OL | IV | B&W | Bech | 03-24-80 | 80-11(08-07-80) | Closed 3 |
| Arkansas 2 | AP&L | 50-368 | OL | IV | C-E | Bech | 03-24-80 | 80-11(08-07-80) | Closed 3 |
| Beaver Valley 1 | DLC | 50-334 | OL | I | W | S&W | 03-21-80 | 83-29(01-11-84) | Closed 3 |
| Beaver Valley 2 | DLC | 50-412 | CP | I | W | S&W | 03-19-80 | 85-25(12-17-85) | Closed 4 |
| Bellefonte 1 | TVA | 50-438 | CP | II | B&W | TVA | 03-21-80 | 80-08(06-13-80) | Closed 3 |
| Bellefonte 2 | TVA | 50-439 | CP | II | B&W | TVA | 03-21-80 | 80-08(06-13-80) | Closed 3 |
| Big Rock Point 1 | CPC | 50-155 | OL | III | GE | Bech | 03-25-80 | 80-10(09-25-80) | Closed 2 |
| Braidwood 1 | CECO | 50-456 | CP | III | W | S&L | 03-20-80 07-17-84 | | Closed 3 |
| Braidwood 2 | CECO | 50-457 | CP | III | W | S&L | 03-20-80 07-17-84 | | Closed 3 |
| Browns Ferry 1 | TVA | 50-259 | OL | II | GE | TVA | 03-21-80 | | Closed 3 |
| Browns Ferry 2 | TVA | 50-260 | OL | II | GE | TVA | 03-21-80 | | Closed 3 |
| Browns Ferry 3 | TVA | 50-296 | OL | II | GE | TVA | 03-21-80 | | Closed 3 |
| Brunswick 1 | CP&L | 50-325 | OL | II | GE | UE&C | 03-21-80 | 84-08(05-17-84) | Closed 3 |
| Brunswick 2 | CP&L | 50-324 | OL | II | GE | UE&C | 03-21-80 | 84-08(05-17-84) | Closed 3 |
| Byron 1 | CECO | 50-454 | CP | III | W | S&L | 03-20-80 07-17-84 | | Closed 3 |
| Byron 2 | CECO | 50-455 | CP | III | W | S&L | 03-20-80 07-17-84 | | Closed 3 |
| Callaway 1 | UE | 50-483 | CP | III | W | Bech | 03-20-80 | 81-17(08-13-81) | Closed 4 |
| Calvert Cliffs 1 | BG&E | 50-317 | OL | I | C-E | Bech | 03-17-80 | | Closed 3 |
| Calvert Cliffs 2 | BG&E | 50-318 | OL | I | C-E | Bech | 03-17-80 | | Closed 3 |
| Catawba 1 | DUPCO | 50-413 | CP | II | W | DUPCO | 03-24-80 | | Closed 3 |
| Catawba 2 | DUPCO | 50-414 | CP | II | W | DUPCO | 03-24-80 | | Closed 3 |
| Clinton 1 | IP | 50-461 | CP | III | GE | S&L | 03-24-80 | | Closed 3 |
| Comanche Peak 1 | TUGCO | 50-445 | CP | IV | W | G&H | 03-12-80 | 84-29(11-08-84) | Closed 3 |
| Comanche Peak 2 | TUGCO | 50-446 | CP | IV | W | G&H | 03-12-80 | 84-10(11-08-84) | Closed 3 |
| Cook 1 | IMECO | 50-315 | OL | III | W | AEPSC | 03-25-80 | 80-08(07-10-80) | Closed 3 |

See notes at end of table.

TABLE B.1 (contd)

| Facility | Utility | Docket | Facility Status, NRC 02-06-80 | Region | NSSS | AE | Utility Response Date | Inspection Report and Date | Closeout Status and Criterion |
|-----------------|---------|--------|-------------------------------------|--------|-----------|-------|-----------------------------|----------------------------------|-------------------------------------|
| Jook 2 | IMECO | 50-316 | OL | III | <u>W</u> | AEPSC | 03-25-80 | 80-07(07-10-80) | Closed 3 |
| Cooper Station | NPPD | 50-298 | OL | IV | <u>GE</u> | B&R | 03-14-80 | 80-09(07-09-80) | Closed 3 |
| Crystal River 3 | FPC | 50-302 | OL | II | B&W | Gilb | 03-17-80 | 81-15(09-24-81) | Closed 3 |
| Davis-Besse 1 | TECO | 50-346 | OL | III | B&W | Bech | 03-14-80 | 80-06(04-29-80) | Closed 5 |
| Diablo Canyon 1 | PG&E | 50-275 | CP | V | <u>W</u> | PG&E | 09-24-80 | | Closed 3 |
| Diablo Canyon 2 | PG&E | 50-323 | CP | V | <u>W</u> | PG&E | 09-24-80 | | Closed 3 |
| Dresden 1 | CECO | 50-010 | SDI | III | <u>GE</u> | | 03-20-80 | | Closed 1 |
| Dresden 2 | CECO | 50-237 | OL | III | GE | S&L | 03-20-80 | 81-33(12-08-81) | Closed 3 |
| Dresden 3 | CECO | 50-249 | OL | III | GE | S&L | 03-20-80 | 81-25(12-08-81) | Closed 3 |
| Duane Arnold | IELPCO | 50-331 | OL | III | GE | Bech | 03-20-80 | 81-27(03-15-82) | Closed 3 |
| Farley 1 | APCO | 50-348 | OL | II | <u>W</u> | SS | 03-05-80 | 85-02(02-15-85) | Closed 3 |
| Farley 2 | APCO | 50-364 | CP | II | <u>W</u> | SS | 03-05-80 | 80-12(05-22-80) | Closed 3 |
| Fermi 2 | DECO | 50-341 | CP | III | <u>GE</u> | S&L | 03-28-80 | | Closed 3 |
| FitzPatrick | NYPA | 50-333 | OL | I | GE | S&W | 04-07-80 | | Closed 3 |
| Fort Calhoun 1 | OPPD | 50-285 | OL | IV | C-E | G&H | 03-21-80 | 80-17(10-20-80) | Closed 5 |
| Fort St. Vrain | PSCC | 50-267 | OL | IV | GA | S&L | 03-22-80 | | Closed 3 |
| Ginna | RG&E | 50-244 | OL | I | <u>W</u> | Gilb | 03-21-80 | | Open |
| Grand Gulf 1 | MP&L | 50-416 | CP | II | <u>GE</u> | Bech | 03-20-80 | 82-18(03-23-82) | Closed 3 |
| Haddam Neck | CYAPCO | 50-213 | OL | I | <u>W</u> | S&W | 03-24-80 | 85-13(09-05-85) | Closed 3 |
| Harris 1 | CP&L | 50-400 | CP | II | <u>W</u> | Ebas | 04-01-80 | 85-27(08-01-85) | Closed 3 |
| Hatch 1 | GPC | 50-321 | OL | II | GE | Bech | 03-21-80 | 80-22(05-30-80) | Closed 3 |
| Hatch 2 | GPC | 50-366 | OL | II | GE | Bech | 03-21-80 | 80-22(05-30-80) | Closed 3 |
| Hope Creek 1 | PSE&G | 50-354 | CP | I | GE | Bech | 03-21-80 | 82-01(02-11-82) | Closed 4 |
| Humboldt Bay 3 | PG&E | 50-133 | SDI | V | GE | Bech | 03-31-80 | 85-52(12-10-85) | Closed 1 |

* LER

See notes at end of table.

TABLE B.1 (contd)

| Facility | Utility | Docket | Facility Status, 02-06-80 | NRC Region | NSSS | AE | Utility Response Date | Inspectica Report and Date | Closeout Status and Criterion |
|-------------------|------------|--------|---------------------------------|---------------|----------|----------------|-----------------------------|----------------------------------|-------------------------------------|
| Indian Point 1 | ConEd | 50-003 | SDI | I | B&W | | 03-21-80 | | Closed 1 |
| Indian Point 2 | ConEd | 50-247 | OL | I | <u>W</u> | UE&C | 03-21-80 | 83-11(05-11-83) | Closed 3 |
| Indian Point 3 | NYP&A | 50-286 | OL | I | <u>W</u> | UE&C | 03-05-80 | 83-17(10-25-83) | Closed 3 |
| Kewaunee | WPS | 50-305 | OL | III | <u>W</u> | PS&E | 03-28-80 | | Closed 3 |
| La Crosse | DPC | 50-409 | OL | III | Allis | S&L | 03-06-80 | 80-01(05-30-80) | Closed 3 |
| LaSalle 1 | CECO | 50-373 | CP | III | GE | S&L | 03-20-80 | 80-14(05-02-80) | Closed 5 |
| LaSalle 2 | CECO | 50-374 | CP | III | GE | S&L | 03-20-80 | 83-08(04-06-83) | Closed 3 |
| Limerick 1 | PECO | 50-352 | CP | I | GE | Bech | 03-17-80 | 84-19(05-17-84) | Closed 4 |
| Limerick 2 | PECO | 50-353 | CP | I | GE | Bech | 03-17-80 | 84-06(05-17-84) | Closed 4 |
| Maine Yankee | MYAPCO | 50-309 | OL | I | C-E | S&W | 03-18-80 | 80-10(08-18-80) | Closed 3 |
| McGuire 1 | DUPCO | 50-369 | CP | II | <u>W</u> | DUPCO | 03-21-80 | 82-15(06-10-82) | Closed 3 |
| McGuire 2 | DUPCO | 50-370 | CP | II | <u>W</u> | DUPCO | 03-21-80 | | Closed 3 |
| Millstone 1 | NNECO | 50-245 | OL | I | GE | Ebas | 03-24-80 | 80-17(10-27-80) | Closed 3 |
| Millstone 2 | NNECO | 50-336 | OL | I | C-E | Bech | 03-24-80 | 80-19(10-27-80) | Closed 3 |
| Millstone 3 | NNECO | 50-423 | CP | I | <u>W</u> | S&W | 03-18-80 | 83-02(03-09-83) | Closed 3 |
| Monticello | NSP | 50-263 | OL | III | GE | Bech | 03-12-80 | 84-06(05-11-84) | Closed 3 |
| Nine Mile Point 1 | NMP | 50-220 | OL | I | GE | NMP | 03-19-80 | | Closed 3 |
| Nine Mile Point 2 | NMP | 50-410 | CP | I | GE | S&W | 03-21-80 | 81-06(08-19-81) | Closed 4 |
| North Anna 1 | VEPCO | 50-338 | OL | II | <u>W</u> | S&W | 03-21-80 | | Closed 3 |
| North Anna 2 | VEPCO | 50-339 | CP | II | <u>W</u> | S&W | 03-21-80 | | Closed 3 |
| Oconee 1 | DUPCO | 50-269 | OL | II | B&W | DUPCO/ Bech | 03-21-80 11-11-80 | 80-33(11-26-80) | Closed 3 |
| Oconee 2 | DUPCO | 50-270 | OL | II | B&W | DUPCO/ Bech | 03-21-80 11-11-80 | 80-29(11-26-80) | Closed 3 |
| Oconee 3 | DUPCO | 50-287 | OL | II | B&W | DUPCO/ Bech | 03-21-80 11-11-80 | 80-26(11-26-80) | Closed 3 |
| Oyster Creek 1 | JCP&L/GPUN | 50-219 | OL | I | GE | B&R | 03-13-80 | | Closed 3 |

See notes at end of table.

TABLE B.1 (contd)

| Facility | Utility | Docket | Facility Status, NRC | | | | AE | Utility Response Date | Inspection Report and Date | Closeout Status and Criterion |
|------------------|---------|--------|----------------------|--------|----------|------|----------|-----------------------|----------------------------|-------------------------------|
| | | | 02-06-80 | Region | NSSS | | | | | |
| Palisades | CPC | 50-255 | OL | III | C-E | Bech | 03-20-80 | | Closed 3 | |
| Palo Verde 1 | APSCO | 50-528 | CP | V | C-E | Bech | 03-18-80 | | Closed 3 | |
| Palo Verde 2 | APSCO | 50-529 | CP | V | C-E | Bech | 03-18-80 | | Closed 3 | |
| Palo Verde 3 | APSCO | 50-530 | CP | V | C-E | Bech | 03-18-80 | | Closed 3 | |
| Peach Bottom 2 | PECO | 50-277 | OL | I | GE | Bech | 03-18-80 | 84-41(01-31-85) | Closed 5 | |
| Peach Bottom 3 | PECO | 50-278 | OL | I | GE | Bech | 03-18-80 | 84-33(01-31-85) | Closed 5 | |
| Perry 1 | CEI | 50-440 | CP | III | GE | Gilb | 04-09-80 | | Closed 3 | |
| Perry 2 | CEI | 50-441 | CP | III | GE | Gilb | 04-09-80 | | Closed 3 | |
| Pilgrim 1 | BECO | 50-293 | OL | I | GE | Bech | 04-15-80 | 82-19(08-12-82) | Closed 3 | |
| Point Beach 1 | WEPCO | 50-266 | OL | III | <u>W</u> | Bech | 03-26-80 | 80-17(12-04-80) | Closed 5 | |
| Point Beach 2 | WEPCO | 50-301 | OL | III | <u>W</u> | Bech | 03-26-80 | 80-17(12-04-80) | Closed 5 | |
| Prairie Island 1 | NSP | 50-282 | OL | III | <u>W</u> | FPI | 03-24-80 | | Closed 3 | |
| Prairie Island 2 | NSP | 50-306 | OL | III | <u>W</u> | FPI | 03-24-80 | | Closed 3 | |
| Quad Cities 1 | CECO | 50-254 | OL | III | GE | S&L | 03-20-80 | | Closed 3 | |
| Quad Cities 2 | CECO | 50-265 | OL | III | GE | S&L | 03-20-80 | | Closed 3 | |
| Rancho Seco 1 | SMUD | 50-312 | OL | V | B&W | Bech | 03-06-80 | | Closed 3 | |
| River Bend 1 | GSU | 50-458 | CP | V | GE | S&W | 03-25-80 | 85-30(05-09-85) | Closed 4 | |
| Robinson 2 | CP&L | 50-261 | OL | II | <u>W</u> | Ebas | 03-21-80 | 80-16(08-15-80) | Closed 3 | |
| Salem 1 | PSE&G | 50-272 | OL | I | <u>W</u> | PS&G | 03-19-80 | 80-32(01-20-81) | Closed 3 | |
| Salem 2 | PSE&G | 50-311 | CP | I | <u>W</u> | PS&G | 03-19-80 | 80-22(01-20-81) | Closed 3 | |
| San Onofre 1 | SCE | 50-206 | OL | V | <u>W</u> | Bech | 03-06-80 | | Closed 3 | |
| San Onofre 2 | SCE | 50-361 | CP | V | C-E | Bech | 03-21-80 | | Closed 4 | |
| San Onofre 3 | SCE | 50-362 | CP | V | C-E | Bech | 03-21-80 | | Closed 4 | |
| Seabrook 1 | PSNH | 50-443 | CP | I | <u>W</u> | UE&C | 03-21-80 | 85-31(12-30-85) | Closed 4 | |
| Seabrook 2 | PSNH | 50-444 | CP | I | <u>W</u> | UE&C | 03-21-80 | | Closed 4 | |

See notes at end of table.

TABLE B.1 (contd)

| Facility | Utility | Docket | Facility Status, NRC | | | | AE | Utility Response Date | Inspection Report and Date | Closeout Status and Criterion |
|------------------|-------------|--------|----------------------|--------|----------------|-----------------|----------------------------------|------------------------------------|----------------------------|-------------------------------|
| | | | 02-06-80 | Region | NSSS | | | | | |
| Sequoyia | TVA | 50-327 | CP | II | <u>W</u> | TV ^a | 03-21-80 | 80-23(09-08-80) | Closed 5 | |
| Sequoyia | TVA | 50-328 | CP | II | <u>W</u> | TV ^a | 03-21-80 | 81-23(06-03-81) | Closed 5 | |
| Sequoyia | LILCO | 50-322 | CP | I | <u>GE</u> | S&W | 03-21-80 | 82-02(02-02-82) | Closed 3 | |
| Seminole 1 | HL&P | 50-498 | CP | IV | <u>W</u> | Bech | 03-17-80 | 81-32(11-12-81) | Closed 4 | |
| Seminole 2 | HL&P | 50-499 | CP | IV | <u>W</u> | Bech | 03-17-80 | 81-32(11-12-81) | Closed 4 | |
| Sevier | FPL | 50-335 | OL | II | C-E | Ebas | 03-26-80 | 80-36(01-29-81) 81-16(07-29-81) | Closed 3 | |
| Sevier | FPL | 50-389 | CP | II | C-E | Ebas | 04-15-80 | 83-25(04-05-83) | Closed 3 | |
| Sumner | SCE&G | 50-395 | CP | II | <u>W</u> | Gilb | 03-11-80 | 80-10(05-02-80) | Closed 3 | |
| Surry 1 | VEPCO | 50-280 | OL | II | <u>W</u> | S&W | 03-21-80 | 82-14(06-28-82) | Closed 3 | |
| Surry 2 | VEPCO | 50-281 | OL | II | <u>W</u> | S&W | 03-21-80 | 82-14(06-28-82) | Closed 3 | |
| Susquehanna 1 | PP&L | 50-387 | CP | I | GE | Bech | 03-25-80 07-30-80 11-19-80 | | Closed 3 | |
| Susquehanna 2 | PP&L | 50-388 | CP | I | GE | Bech | 03-25-80 07-30-80 11-19-80 | | Closed 3 | |
| TMI 1 | GPUN/Met-Ed | 50-289 | OL | I | <u>B&W</u> | Gilb | 03-25-80 | | Closed 3 | |
| TMI 2 | GPUN/Met-Ed | 50-320 | SDI | I | <u>B&W</u> | Bech | | | Closed 1 | |
| Trojan | PGE | 50-344 | OL | V | <u>W</u> | Bech | 06-04-80 | | Closed 3 | |
| Turkey Point 3 | FPL | 50-250 | OL | II | <u>W</u> | Bech | 03-26-80 | 81-13(06-09-81) | Closed 3 | |
| Turkey Point 4 | FPL | 50-251 | OL | II | <u>W</u> | Bech | 03-26-80 | 81-13(06-09-81) | Closed 3 | |
| Vermont Yankee 1 | VYNP | 50-271 | OL | I | <u>GE</u> | Ebas | 03-20-80 | 82-19(11-16-82) | Closed 3 | |
| Vogtle 1 | GPC | 50-424 | CP | II | <u>W</u> | SS/Bech | 03-20-80 | | Closed 4 | |
| Vogtle 2 | GPC | 50-425 | CP | II | <u>W</u> | SS/Bech | 03-20-80 | 81-15(01-28-82) | Closed 4 | |
| WNP 1 | WPPSS | 50-460 | CP | V | B&W | UE&C | 03-19-80 | 86-01(07-07-86) | Closed 3 | |
| WNP 2 | WPPSS | 50-397 | CP | V | GE | B&R | 03-18-80 | | Closed 4 | |
| WNP 3 | WPPSS | 50-508 | CP | V | C-E | Ebas | 03-03-80 | | Closed 4 | |

See notes at end of table.

TABLE B.1 (contd)

| Facility | Utility | Docket | Facility Status, 02-06-80 | NRC Region | NSSS | AE | Utility Response Date | Inspection Report and Date | Closeout Status and Criterion |
|---------------|---------|--------|---------------------------|------------|----------|------|-----------------------|----------------------------|-------------------------------|
| Waterford 3 | LP&L | 50-382 | CP | IV | C-E | Ebas | 03-21-80 | | Closed 3 |
| Watts Bar 1 | TVA | 50-390 | CP | II | <u>W</u> | TVA | 03-21-80 | 85-08(03-28-85) | Closed 3 |
| Watts Bar 2 | TVA | 50-391 | CP | II | <u>W</u> | TVA | 03-21-80 | 85-08(03-28-85) | Closed 3 |
| Wolf Creek 1 | KG&E | 50-482 | CP | IV | <u>W</u> | Bech | 03-20-80 | 83-04(03-24-83) | Closed 4 |
| Yankee-Rowe 1 | YAECO | 50-029 | OL | I | <u>W</u> | S&W | 03-24-80 | 81-02(03-17-81) | Closed 3 |
| Zion 1 | CECO | 50-295 | OL | III | <u>W</u> | S&L | 03-20-80 | 80-14(08-18-80) | Closed 3 |
| Zion 2 | CECO | 50-304 | OL | III | <u>W</u> | S&L | 03-20-80 | 80-14(08-18-80) | Closed 3 |

Notes:

- Facility status relates to 02-06-80, and is based on references 1 and 2, Page B-7.
- The following abbreviations apply to facility status:
CP, construction permit; OL, operating license;
SDI, shut down indefinitely or permanently.
- For bulletin closeout criteria, see Page 4.
- The following 44 facilities which were under construction in 1980 have operating licenses at the present time:

| | | | |
|--------------------|-------------------|------------------|----------------------|
| Beaver Valley 2 | Fermi 2 | North Anna 2 | South Texas 1 (LPTL) |
| Braidwood 1 | Grand Gulf 1 | Palo Verde 1,2,3 | St. Lucie 2 |
| Braidwood 2 (LPTL) | Harris 1 | Perry 1 | Summer 1 |
| Byron 1,2 | Hope Creek 1 | River Bend 1 | Susquehanna 1,2 |
| Callaway 1 | LaSalle 1,2 | Salem 2 | Vogtle 1 |
| Catawba 1,2 | Limerick 1 | San Onofre 2,3 | WNP 2 |
| Clinton 1 | McGuire 1,2 | Sequoyah 1,2 | Waterford 3 |
| Diablo Canyon 1,2 | Millstone 3 | Shoreham (LPTL) | Wolf Creek 1 |
| Farley 2 | Nine Mile Point 2 | | |

REFERENCES

1. United States Nuclear Regulatory Commission, Licensed Operating Reactors, Status Summary Report, Data as of 12-31-87, NUREG-0020, Volume 12, Number 1, January 1988.
2. United States Nuclear Regulatory Commission, Nuclear Power Plants, Construction Status Report, Data as of 06-30-82, NUREG-0030, Volume 6, Number 2, October 1982.
3. United States Nuclear Regulatory Commission, Code of Federal Regulation, Energy, Title 10, Chapter 1, January 1, 1987, cited as 10CFR 0.735-1.

APPENDIX C

Proposed Followup Item

Region I

Ginna

Utility personnel responded acceptably March 21, 1980, indicating that the cells in the "B" Containment Purge System were being replaced although the system was still operable.

An inspection has been scheduled to confirm that testing of replacement cells has been completed satisfactorily.

This action will close out the bulletin for this plant.

APPENDIX D

Abbreviations

| | |
|--------|---|
| AE | Architect Engineer |
| AEPSC | American Electric Power Services Corporation |
| Allis | Allis Chalmers Corporation |
| ANSI | American National Standards Institute |
| APCO | Alabama Power Company |
| AP&L | Arkansas Power and Light Company |
| APSCO | Arizona Public Service Company |
| B&R | Burns & Roe |
| Bech | Bechtel Corporation |
| BECO | Boston Edison Company |
| BG&E | Baltimore Gas and Electric Company |
| B&W | Babcock & Wilcox Company |
| BWR | Boiling Water Reactor |
| C-E | Combustion Engineering Incorporated |
| CECO | Commonwealth Edison Company |
| CEI | Cleveland Electric Illuminating Company |
| CFR | Code of Federal Regulations |
| ConEd | Consolidated Edison Company of New York, Inc. |
| CP | Construction Permit |
| CPC | Consumers Power Company |
| CP&L | Carolina Power and Light Company |
| CR | Contractor Report |
| CYAPCO | Connecticut Yankee Atomic Power Company |
| DECO | Detroit Edison Company |
| DLC | Duquesne Light Company |
| DPC | Dairyland Power Cooperative |
| DUPCO | Duke Power Company |
| Ebas | Ebasco Services, Inc. |
| ESF | Engineered Safety Feature |
| FPC | Florida Power Corporation |
| FPI | Fluor Pioneer, Inc. |
| FPL | Florida Power & Light Company |
| GA | General Atomics |
| GAO | Government Accounting Office |
| GE | General Electric Company |
| G&H | Gibbs & Hill, Inc. |
| Gilb | Gilbert Associates, Inc. |

| | |
|--------|--|
| GPC | Georgia Power Company |
| GPUN | GPU Nuclear Corporation |
| GSU | Gulf States Utilities Company |
| HL&P | Houston Lighting and Power Company |
| IE | (See NRC/IE) |
| IEB | Inspection and Enforcement Bulletin (NRC) |
| IEEE | Institute of Electrical and Electronic Engineers |
| IELPCO | Iowa Electric Light and Power Company |
| IMECO | Indiana and Michigan Electric Company |
| IP | Illinois Power Company |
| IR | Inspection Report (NRC/Region) |
| JCP&L | Jersey Central Power and Light |
| KG&E | Kansas Gas and Electric Company |
| LER | Licensee Event Report |
| LILCO | Long Island Lighting Company |
| LP&L | Louisiana Power and Light Company |
| Met-Ed | Metropolitan Edison Company |
| MP&L | Mississippi Power and Light Company |
| MYAPCO | Maine Yankee Atomic Power Company |
| NIPSCO | Northern Indiana Public Service Company |
| NMP | Niagara Mohawk Power Company |
| NNECO | Northeast Nuclear Energy Company |
| NPPD | Nebraska Public Power District |
| NRC/IE | Nuclear Regulatory Commission/ Office of Inspection & Enforcement |
| NRR | Office of Nuclear Reactor Regulation (NRC) |
| NSP | Northern States Power Company |
| NSSS | Nuclear Steam System Supplier |
| NU | Northeast Utilities |
| OL | Operating License |
| OPPD | Omaha Public Power District |
| PASNY | Power Authority of the State of New York |
| PECO | Philadelphia Electric Company |
| PGE | Portland General Electric Company |
| PG&E | Pacific Gas and Electric Company |
| PP&L | Pennsylvania Power and Light Company |
| PSCC | Public Service Company of Colorado |
| PSE&G | Public Service Electric and Gas Company |
| PS&E | Pioneer Services and Engineering |
| PSI | Public Service Indiana |
| PSNH | Public Service Company of New Hampshire |
| PWR | Pressurized Water Reactor |
| R | Region (NRC) |

| | |
|--------|---|
| RG&E | Rockaster Gas and Electric Corporation |
| RPS | Reactor Protective System |
| S&L | Sargent & Lundy Engineers |
| S&W | Stone & Webster Engineering Corp. |
| SCE | Southern California Edison Company |
| SCE&G | South Carolina Electric and Gas Company |
| SDI | Shut Down Indefinitely or Permanently |
| SMUD | Sacramento Municipal Utility District |
| SNUPPS | Standardized Nuclear Unit Power Plant Systems |
| SS | Southern Services, Inc. |
| TECO | Toledo Edison Company |
| TMI | Three Mile Island |
| TUGCO | Texas Utilities Generating Company |
| TVA | Tennessee Valley Authority |
| UE | Union Electric Company |
| UE&C | United Engineers & Constructors |
| VEPCO | Virginia Electric and Power Company |
| VYNP | Vermont Yankee Nuclear Power Corporation |
| W | Westinghouse Electric Corporation |
| WEPCO | Wisconsin Electric Power Company |
| WNP | Washington Nuclear Project |
| WPPSS | Washington Public Power Supply System |
| WPS | Wisconsin Public Service Corporation |
| YAECO | Yankee Atomic Electric Company |

BIBLIOGRAPHIC DATA SHEET

NUREG/CR-4932
PARAMETER IE-167

SEE INSTRUCTIONS ON THE REVERSE

2. TITLE AND SUBTITLE

Closeout of IE Bulletin 80-03:
Loss of Charcoal from Standard Type II,
Two-Inch, Tray Adsorber Cells

3. LEAVE BLANK

4. DATE REPORT COMPLETED

MONTH: March YEAR: 1988

5. DATE REPORT ISSUED

MONTH: April YEAR: 1988

5. AUTHOR(S)

R. S. Dean, W. J. Foley, A. Hennick

7. PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

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13380 Watertown Plank Road
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Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
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11a. TYPE OF REPORT

Technical

b. PERIOD COVERED (Inclusive dates)

2/2/87 - 3/29/88

12. SUPPLEMENTARY NOTES

13. ABSTRACT (200 words or less)

Because of concern about defective charcoal tray adsorber cells found in certain ventilation systems at the Sequoyah Nuclear Plant, the NRC/IE issued IE Bulletin 80-03 on February 6, 1980. Some charcoal cells are used in ventilation systems associated with engineered safety features, which are provided for protection from abnormal events. Others are installed to control radioactive materials during expected operations. Licensees of operating power reactors and holders of permits for those under construction were required to take specific actions. Evaluation of utility responses and NRC/Region inspection reports shows that the bulletin can be closed out by means of specific criteria for 123 (99%) of the 124 facilities with operating licenses or construction permits. A followup item is proposed for the only facility with open bulletin status, for use by the NRC in ensuring satisfactory completion of corrective action. The cells with riveted screens which were identified at Sequoyah were not found at any other facility. Although cells with miscellaneous defects were found at nine facilities other than Sequoyah, there were no charcoal problems.

14. DOCUMENT ANALYSIS - a. KEYWORDS/DESCRIPTORS

Closeout of IE Bulletin 80-03
Ventilation systems; defective charcoal tray adsorber cells

15. AVAILABILITY STATEMENT

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CLOSEOUT OF IE BULLETIN 80-03: LOSS OF CHARCOAL FROM STANDARD TYPE II, TWO-INCH,
TRAY ADSORBER CELLS

APRIL 1988