

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

July 26, 1993

NRC INFORMATION NOTICE 93-59: UNEXPECTED OPENING OF BOTH DOORS IN AN AIRLOCK

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to a potential problem that may result when interlocks which prevent both airlock doors being open at the same time are not in use or not operable. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

On February 25, 1993, when the plant was operating at 100-percent power, personnel at River Bend Station inadvertently had both airlock doors open at the same time. The airlock at River Bend is a pneumatic airlock that was designed for either automatic operation actuated by a pushbutton or manual operation using handwheels located on the doors. The original intent was to operate the airlock in the automatic mode, which incorporated both electrical and mechanical interlocks. However, operation in the automatic mode was not reliable and, since 1985, the airlock was operated in the manual mode.

The manual mode incorporates only the mechanical actions associated with turning the handwheel. The electrical interlocks, which had been identified as being for "personnel safety," were not being used, and the licensee did not believe that they were necessary. An operable mechanical interlock allows only one handwheel at a time to be in the open position. Operation of the handwheel (1) positions two pins into keepers, (2) repositions two 3-way ball valves used to inflate/deflate the pneumatic seal, (3) operates a valve that equalizes pressure across the door, and (4) actuates the mechanical interlock.

On February 25, 1993, a licensee employee entering containment closed the outer door (not completely) and turned the handwheel to the closed position. By placing the outer door handwheel in the closed position, the mechanical interlock was satisfied, thereby permitting the handwheel on the inner door to

9307200123

updated 9/16

PDR IFE Notice 93-059

Jfd
11

be subsequently turned to the open position. This subsequent action deflated the door seal and air rushed from the containment past the employee in the airlock. A supervisor outside the airlock sensed the air flow out of the airlock and alerted the employee in the airlock, who promptly re-inflated the seals on the inner door and then properly (fully) closed the outer door. A second instance on the same day that involved different people nearly resulted in a repeat opening of both doors. An engineer leaving the containment nearly opened the inner door while the outer door was not fully closed. A technician in the airlock had previously turned the handwheel on the outer door to the closed position. In both instances, the lack of an operable door position interlock permitted the handwheel to be turned to the open position.

The licensee has modified the interlock system on the airlocks to incorporate the door closure switch into the circuit to prohibit manual operation of the handwheel when the associated door is not fully closed.

Discussion

There have been a number of other instances at other facilities when both doors of a containment airlock were opened; however, only a small fraction occurred during power operation. Nevertheless, each instance represents a potential for a large leak path. Most of the known at-power occurrences were attributed to failure to properly seat the door (due to rebound) or to component failure. In most instances, the time both doors were open was very short. Thus, the actual safety significance was low.

The effects of changing the operating mode of an airlock from automatic to manual may not be limited to a change from the pushbutton operating the handwheel to manually operating the handwheel. Operation in the manual mode may also eliminate some of the design interlock features, such as those that would prevent having both doors open at the same time and assuring that there is no significant pressure differential across an airlock door before it is opened.

Of particular concern in the River Bend event is that part of the interlock system was removed from service, apparently without a fundamental understanding of the function of the electrical interlocks in assuring the integrity of the containment boundary. The safety significance of positive verification of door closure via functioning door position switches was not recognized.

IN 93-59
July 26, 1993
Page 3 of 3

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Alfred E. Chaffee

Brian K. Grimes, Director
Division of Operating Reactors Support
Office of Nuclear Reactor Regulation

Technical contact: J. Carter, NRR
(301) 504-1153

Attachment:
List of recently Issued NRC Information Notice

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

| Information Notice No. | Subject | Date of Issuance | Issued to |
|------------------------|--|------------------|---|
| 93-58 | Nonconservatism in Low-Temperature Overpressure Protection for Pressurized-Water Reactors | 07/26/93 | All holders of OLs or CPs for pressurized-water reactors. |
| 93-57 | Software Problems Involving Digital Control Console Systems at Non-Power Reactors | 07/23/93 | All holders of OLs or CPs for test and research reactors and nuclear power reactors |
| 93-56 | Weakness in Emergency Operating Procedures Found as Result of Steam Generator Tube Rupture | 07/22/93 | All holders of OLs or CPs for pressurized water reactors. |
| 93-55 | Potential Problem with Main Steamline Break Analysis for Main Steam Vaults/Tunnels | 07/21/93 | All holders of OLs or CPs for pressurized water reactors. |
| 93-54 | Motor-Operated Valve Actuator Thrust Variations Measured with A Torque Thrust Cell and A Strain Gage | 07/20/93 | All holders of OLs or CPs for nuclear power reactors. |
| 93-53 | Effect of Hurricane Andrew on Turkey Point Nuclear Generating Station and Lessons Learned | 07/20/93 | All holders of OLs or CPs for nuclear power reactors. |
| 93-52 | Draft NUREG-1477, "Voltage-Based Interim Plugging Criteria for Steam Generator Tubes" | 07/14/93 | All holders of OLs or CPs for pressurized water reactor (PWRs). |
| 93-51 | Repetitive Overspeed Tripping of Turbine-Driven Auxiliary Feed-water Pumps | 07/09/93 | All holders of OLs or CPs for nuclear power reactors. |

OL = Operating License
CP = Construction Permit

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

FIRST CLASS MAIL
POSTAGE AND FEES PAID
USNRC
PERMIT NO. G-67

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

original signed by
A. E. Chaffee

Brian K. Grimes, Director
Division of Operating Reactors Support
Office of Nuclear Reactor Regulation

Technical contact: J. Carter, NRR
(301) 504-1153

Attachment:
List of recently Issued NRC Information Notices

*See previous concurrence

| | | | | |
|------|----------------|--------------|--------------|--------------------|
| OFC | OEAB:DORS | SC/OEAB:DORS | PUB:ADM | C/OEAB:DORS |
| NAME | JCarter* | RDennig* | Tech Ed* | AChaffee* |
| DATE | 05/14/93 | 05/17/93 | 04/22/93 | 05/17/93 |
| OFC | *PDIV-2:ADR4-5 | *OGCB:DORS | *C/OGCB:DORS | D/DORS |
| NAME | EBaker | MHarper | GMarcus | BGrimes <i>all</i> |
| DATE | 06/08/93 | 06/08/93 | 07/ /93 | 07/20/93 |

[OFFICIAL RECORD COPY]
DOCUMENT NAME: S:\DORS_SEC\93-59.IN

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Brian K. Grimes, Director
Division of Operating Reactors Support
Office of Nuclear Reactor Regulation

Technical contact: J. Carter, NRR
(301) 504-1153

Attachment: List of recently Issued NRC Information Notices

*See previous concurrence

| | | | | |
|------|----------------|--------------|---------------------|-------------------|
| OFC | OEAB:DORS | SC/OEAB:DORS | PUB:ADM | C/OEAB:DORS |
| NAME | JCarter* | RDennig* | Tech Ed* | ACHaffee* |
| DATE | 05/14/93 | 05/17/93 | 04/22/93 | 05/17/93 |
| OFC | *PDIV-2:ADR4-5 | *OGCB:DORS | C/OGCB:DORS | D/DORS |
| NAME | EBaker | MHarper | GMarcus <i>GMM</i> | BGrimes <i>BG</i> |
| DATE | 06/08/93 | 06/08/93 | 07 /1/93 | 06/ /93 |

[OFFICIAL RECORD COPY]
DOCUMENT NAME: S:\DORS_SEC\AIRLOCK.IN

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Brian K. Grimes, Director
Division of Operating Reactors Support
Office of Nuclear Reactor Regulation

Technical contact: J. Carter, NRR
(301) 504-1153

Attachment: List of recently Issued NRC Information Notices

*See previous concurrence

| | | | | |
|------|-----------|--------------|----------|-------------|
| OFC | OEAB:DORS | SC/OEAB:DORS | PUB:ADM | C/OEAB:DORS |
| NAME | JCarter* | RDennig* | Tech Ed* | AChaffee* |
| DATE | 05/14/93 | 05/17/93 | 04/22/93 | 05/17/93 |

| | | | | |
|------|-------------------|--------------------|-------------|---------|
| OFC | PDIV-2:ADR4-5 | OGCB:DORS | C/OGCB:DORS | D/DORS |
| NAME | EBaker <i>STB</i> | MHarper <i>mae</i> | GMarcus | BGrimes |
| DATE | 06/8/93 | 06/08/93 | 06/ /93 | 06/ /93 |

[OFFICIAL RECORD COPY]
DOCUMENT NAME: S:\DORS_SEC\IN_25195

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Brian K. Grimes, Director
Division of Operating Reactors Support
Office of Nuclear Reactor Regulation

Technical contact: J. Carter, NRR
(301) 504-1153

Attachment: List of recently Issued NRC Information Notices

| | | | | |
|------|-----------|--------------|-----------|-------------|
| OFC | OEAB:DORS | SC/OEAB:DORS | PUB:ADM * | C/OEAB:DORS |
| NAME | JCarter | RDennig | Tech Ed | ACHaffee |
| DATE | 5/14/93 | 5/17/93 | 4/22/93 | 5/17/93 |

| | | | |
|------|---------------|-------------|---------|
| OFC | PDIV-2:ADR4-5 | C/OGCB:DORS | D/DORS |
| NAME | EBaker | GMarcus | BGrimes |
| DATE | / /93 | / /93 | / /93 |

[OFFICIAL RECORD COPY]
DOCUMENT NAME: G:\TJC\IN_25195

| | | | | |
|------|-----------|--------------|-------------------|-------------|
| OFC | OEAB:DORS | SC/OEAB:DORS | PUB:ADM | C/OEAB:DORS |
| NAME | JCarter | RDennig | Tech Ed <i>rs</i> | AChaffee |
| DATE | / /93 | / /93 | 4/27/93 | / /93 |

| | | | |
|------|---------------|-------------|---------|
| OFC | PDIV-2:ADR4-5 | C/OGCB:DORS | D/DORS |
| NAME | EBaker | GMarcus | BGrimes |
| DATE | / /93 | / /93 | / /93 |

[OFFICIAL RECORD COPY]
DOCUMENT NAME: G:\TJC\IN_25195

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Brian K. Grimes, Director
Division of Operating Reactors Support
Office of Nuclear Reactor Regulation

Technical contact: J. Carter, NRR
(301) 504-1153

Attachment: List of recently Issued NRC Information Notices

*See previous concurrence

| | | | | |
|------|-----------|--------------|----------|-------------|
| OFC | OEAB:DORS | SC/OEAB:DORS | PUB:ADM | C/OEAB:DORS |
| NAME | JCarter* | RDennig* | Tech Ed* | AChaffee* |
| DATE | 05/14/93 | 05/17/93 | 04/22/93 | 05/17/93 |

| | | | |
|------|---------------|-------------|---------|
| OFC | PDIV-2:ADR4-5 | C/OGCB:DORS | D/DORS |
| NAME | EBaker | GMarcus | BGrimes |
| DATE | / /93 | / /93 | / /93 |

[OFFICIAL RECORD COPY]
DOCUMENT NAME: S:\DORS_SEC\IN_25195