

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

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Report No.: 50-458/99-04
Licensee: Entergy Operations, Inc.
Facility: River Bend Station
Location: 5485 U.S. Highway 61
St. Francisville, Louisiana
Dates: April 12-16 and April 28-29, 1999
Inspector: Michael C. Hay, Radiation Specialist
Plant Support Branch
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Plant Support Branch
Division of Reactor Safety
Attachment: Supplemental Information

EXECUTIVE SUMMARY

River Bend Station NRC Inspection Report No. 50-458/99-04

A routine, announced inspection was conducted to review portions of the radiation protection program. Areas reviewed included exposure controls, control of radioactive material and contamination, and radiation technician and worker practices.

Plant Support

- On the basis of the inspection sample, the overall implementation of the external exposure control program during the refueling outage was weak as evidenced by the number of violations identified for the failure of radiation workers to follow radiation work permit requirements, an inadequate radiation protection prejob briefing, inadequate instructions to radiation workers, and poor radiation work supervisory oversight (Section R1.1).
- A violation of Technical Specification 5.4.1.a was identified for the failure to perform a documented, prejob briefing in accordance with Radiation Section Procedure RSP-0200, Revision 16. This violation is in the licensee's corrective action program as Condition Report 1999-0557. This Severity Level IV violation is being treated as a noncited violation consistent with Appendix C of the NRC Enforcement Policy (Section R1.1).
- Five examples of Technical Specification 5.4.1.a violations were identified for the failure of personnel to adhere to radiation work permit requirements. These violations are in the licensee's corrective action program as Condition Reports 1999-0195, 1999-0427, 1999-0551, 1999-0564, and 1999-0723. These Severity Level IV violations are being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy (Section R1.1 and R7.1).
- Two examples of 10 CFR 19.12 violations were identified: one involved the failure to adequately inform workers in the storage, transfer, or use of radiation and/or radioactive material; and one involved the failure to adequately instruct individuals in precautions to minimize exposure. These violations are in the licensee's corrective action program as Condition Reports 1999-0723 and 1999-0551. These Severity Level IV violations are being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy (Section R1.1).
- A violation of Technical Specification 5.7.3 was identified for the failure to lock or continuously guard a locked high radiation area. This violation is in the licensee's corrective action program as Condition Report 1999-0598. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy (Section R1.1).
- A violation of Technical Specification 5.4.1.a was identified for the failure to maintain the appropriate personnel qualified to wear respirators. This violation is in the licensee's corrective action program as Condition Reports 1999-0561 and 1999-0562. This

Severity Level IV Violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy (Section R1.2).

- Overall, the implementation of the internal exposure control program was adequate. Whole-body counters were calibrated correctly using sources traceable to the National Institute of Standards and Technology. Internal dose assessments were appropriately performed (Section R1.2).

Report Details

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

Background Information

During February 22-26, 1999, a special inspection was conducted at the River Bend Station facility. This inspection was performed because of concerns with the licensee's radiation work permit program. NRC Inspection Report 50-458/98-10 documented the following:

- The radiation work permit program 'was implemented' poorly until July 1998 because the program implementing procedures provided inadequate guidance. The failure to provide adequate guidance to implement a radiation work permit program was identified as a violation of Technical Specification 5.4.1.a.
- As a result of inadequate radiation work permit program implementing procedures, it was determined that radiation work permits contained little radiological information, work areas were not specifically addressed, revisions were not communicated to workers, locked high radiation area work permits did not specify work area dose rates or maximum allowable stay times, and protective clothing requirements were implemented inconsistently.
- The licensee's compliance with 10 CFR 19.12 was identified as an unresolved item pending further NRC inspection.

Given this background, a routine announced core NRC inspection was performed on April 12-16, 1999, to evaluate radiation work permit program implementation during a refueling outage. Additionally, on April 24, 1999, the licensee informed the NRC that an unauthorized individual entered a radiography area. In response to this event, a reactive NRC inspection was performed on April 28-29, 1999.

R1.1 External Exposure Controls

a. Inspection Scope (83750)

The inspector interviewed radiation protection personnel and reviewed the following program elements:

- Radiological controlled area access controls
- Radiation work permits
- Radiological surveys
- Prejob health physics briefings
- Control of high and locked high radiation areas
- Radiological posting
- Personnel dosimetry use

b. Observations and Findings

General Observations

The inspector conducted several tours of the controlled access area and performed independent radiation measurements to confirm the appropriateness of radiological postings. All Technical Specification locked high radiation areas observed were properly locked and posted. All workers observed in the controlled access area wore their dosimetry properly and knew to contact radiation protection personnel if their electronic dosimeters alarmed. Housekeeping throughout the controlled access area was good.

The inspector observed activities at the controlled access area access/egress control point and noted that station workers properly used the personnel contamination monitoring and computerized log-in/out equipment. Radiation protection personnel were available to provide timely response and direction to station workers who alarmed the personnel contamination monitors or who needed assistance gaining access to the controlled access area.

The inspector noted that radiological contamination survey instruments and personnel contamination monitors were properly used by workers exiting contamination areas. Materials released from the radiological controlled area were properly surveyed. Personnel contamination events were correctly recorded in accordance with station procedures. The inspector reviewed selected skin dose evaluations and determined that they were appropriately conducted.

Prejob Briefing

On April 13, 1999, the inspector attended a prejob briefing at the auxiliary building access control point. The work involved a maintenance crew assigned to buff welds on main steam line piping, in support of nondestructive weld examinations. The work location was controlled as both a locked high radiation area and a contamination area. Specific Radiation Work Permit 99-0033-02 was used for this activity. Radiation Work Permit 99-0033-02 required a prejob briefing to be performed prior to the start of work.

The technician who conducted the prejob briefing discussed the access routes to be used and the radiological conditions that would be encountered. The health physics technician who performed the brief stated that general area radiation levels were in the range of 40 to 120 millirems per hour and that localized, contact radiation levels for selected piping in the area were up to 3000 millirems per hour. During the briefing, the maintenance workers noted that the radiological survey did not contain the main steam lines they would be working on. However, the inspector noted that the workers failed to question the validity of the radiological survey record referenced during the briefing.

When the prejob briefing was completed, the workers were instructed to sign the prejob briefing signature page. The inspector noted that the signature page was labeled "Page 4 of 4, Attachment 7." While signing the signature page, a worker recognized that his name was already on the page, indicating that the worker had previously received this briefing to perform work relative to the same radiation work permit.

The inspector reviewed the signature page and noted the following discrepancies: (1) the wrong radiation work permit number was documented, (2) the section specifying the radiation work permit revision was blank, (3) the section documenting the briefing date was blank, (4) the section indicating the radiation protection technician performing the briefing was blank, and (5) the section identifying the radiation protection supervisor responsible for reviewing the signature page was blank.

The inspector asked the radiation protection technician performing the briefing why the workers were placing their names on the signature page for Radiation Work Permit 99-0033-00 when they were being briefed on Radiation Work Permit 99-0033-02. The radiation protection technician stated that it was a mistake. The radiation protection technician then changed the identification section to "Radiation Work Permit 99-0033-00/02," so the signature page could be used for both Radiation Work Permits 99-0033-00 and 99-0033-02. The inspector asked the radiation protection technician how this signature page would specify which radiation work permit the workers were actually briefed on. The radiation protection technician did not know. The radiation protection technician then created a new form for the Radiation Work Permit 99-0033-02 prejob briefing.

The following additional discrepancies were identified:

- The radiation protection technician who briefed the workers on April 13, 1999, used a radiological survey that was performed on September 13, 1997, instead of a more recent survey that was performed on April 5, 1999. The survey results were not significantly different; however, they could have been given the length of time between the two surveys.
- The radiological survey used to brief the workers on April 13, 1999, was for the incorrect location. The correct work area also contained significantly lower radiation levels. Specifically, the dose rates at the correct work location were between 10 to 15 millirems per hour with no hot spots, rather than 40 to 120 millirems per hour with hot spots up to 3000 millirems per hour. Also, the correct work area required a different access route which contained significantly lower radiation levels.

Radiation Section Procedure RSP-0200, "Radiation Work Permits," Revision 16, Section 6.1.6 states, in part, that, "Anytime complex radiological conditions exist or could come to exist over the course of the job, specify the need for a mandatory, formal, documented, prejob briefing (Attachment 7) on the radiation work permit." Radiation Work Permit 99-0033-02 indicated that a prejob briefing was required.

During the prejob briefing, the radiation protection technician failed to fully use or document the prejob briefing using Attachment 7. Specifically, Pages 1 through 3 of Attachment 7 were not used or documented during the briefing. The inspector noted that Pages 1 through 3 of Attachment 7 consisted of a Prejob Briefing Review Checklist which contained 31 items required to be discussed during the briefing if they were applicable to the task.

The inspector noted that the Radiation Work Permit 99-0033-02 prejob briefing checklist specified that the briefing was to include a review of Document SER 4-98. This

document was entitled, "Significant Event Report 4-98." Document SER 4-98 discussed root causes and proper radiological practices to prevent unplanned personnel radiation dose. Specifically, this document discussed how to reduce the potential for unplanned radiation dose provided personnel are sensitive to the following types of deficiencies: (1) inaccurate or incomplete radiological surveys, (2) inadequate work planning and radiation work permits, (3) incorrect guidance provided by radiological protection technicians, (4) noncompliance with radiological protection rules, and (5) ineffective supervisory and management direction and oversight. The inspector noted that there were other required prejob review topics that were not discussed. These topics included but were not limited to: (1) Were any other jobs in the same vicinity that may conflict with this job? and (2) Have past ALARA practices used in similar tasks been incorporated?

Technical Specification 5.4.1.a states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33 includes procedures for the Radiation Work Permit System. Accordingly, the failure to perform a formal, documented prejob briefing using Attachment 7 (Pages 1 through 3), as required by Procedure RSP-0200 was identified as a violation of Technical Specification 5.4.1.a. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Condition Report 1999-0557 (50-458/9904-01).

The inspector attended a subsequent prejob briefing on April 15, 1999, and noted that Attachment 7 was properly used. The inspector noted that all required items were covered in detail during the briefing.

Personnel Contamination Event

On April 14, 1999, the inspector attended a condition report review group meeting. During this meeting, the inspector was informed of Condition Report 1999-0551, which involved two workers who were contaminated over a large portion of their bodies. The two workers were contaminated while cleaning the reactor pressure vessel head o-ring grooves on the reactor building refueling floor.

The inspector interviewed the two personnel who were involved in the contamination event. The workers stated that, previous to April 10, 1999, for several nights, they had been working in a high contamination area on the refuel floor. The contaminated area contained the reactor pressure vessel head and the reactor vessel head studs and nuts. During this time, they were assigned to clean the reactor pressure vessel head studs and nuts.

The workers used Radiation Work Permit 99-1000-03, Revision 0, which allowed entry into high contaminated areas, airborne radiation areas, and locked high radiation areas on the 186-foot refuel floor of the reactor building. Radiation Work Permit 99-1000-03 required workers to use a double set of protective clothing or as directed by radiation protection personnel, when working in a high contamination area. The workers stated that radiation protection personnel had directed the workers to wear a single set of

protective clothing along with a double set of gloves and booties while cleaning the reactor pressure vessel head studs and nuts.

The workers stated that on the night of April 9, 1999, they processed through the reactor building radiological access control point using Radiation Work Permit 99-1000-03, Revision 0. The workers then dressed in single sets of protective clothing with double booties and double gloves. After the workers arrived on the reactor building refuel floor, their job supervisor directed them to clean the reactor pressure vessel head o-ring grooves, instead of cleaning the reactor head studs and nuts. The workers stated they used a liquid solution to clean the reactor pressure vessel head o-ring grooves which dripped and splashed on them and formed puddles of liquid on the floor where they were kneeling.

According to the workers, after about 1 hour under the reactor pressure vessel head, they realized that the job was "nastier" than what they had anticipated. One worker expressed concern about airborne activity and contamination levels and egressed from under the reactor pressure vessel head to discuss these concerns with radiation protection personnel. During this discussion, radiation protection personnel determined that the personnel cleaning the reactor pressure vessel head o-ring grooves were dressed inappropriately for the radiological conditions. Specifically, the workers were not wearing the appropriate clothing needed to minimize their exposure from skin contamination.

The inspector reviewed Personnel Contamination Reports 99-1040P and 99-1041P for the workers who were contaminated under the reactor pressure vessel head. These reports indicated that the workers had received skin contamination on their elbows, knees, face, waist, torso, chest, and wrists. The calculated gross activity levels of skin contamination were as high as 20,000 disintegrations per minute.

The inspector was concerned that the contaminated workers may not have been provided proper radiation protection job coverage nor instructed in the use of have appropriate protective clothing to minimize their exposure. Due to these concerns, the inspector interviewed the radiation protection supervisor who was responsible for activities on the reactor building refuel floor and the maintenance supervisor who was responsible for radiation workers on the refuel floor.

During these interviews, the inspector asked if the radiation protection technicians were provided appropriate intermittent job coverage. Radiation Section Procedure PSP-0200, "Radiation Work Permits," Revision 16, Section 3.2, defines intermittent radiation protection coverage as, "Radiological protection oversight provided by a radiation protection technician initially for an activity and then at a specified frequency established based on job complexity and worker experience level." The radiation protection supervisor stated that intermittent coverage was provided since radiation protection had performed an initial radiological survey under the reactor pressure vessel head and the o-ring grooves, and collected an air sample while workers were under the reactor pressure vessel head.

The inspector agreed that proper radiological surveys were taken relative to the activity. However, the inspector determined that, because of the workers' lack of experience and

the high contamination levels present in their work area, the radiation protection job coverage provided was inadequate. Consequently, the workers were not properly informed of the radiological hazards nor instructed in the appropriate precautions to minimize their exposure.

The licensee informed the inspector that radiation protection job coverage was poor because radiation protection personnel were not aware that work was being performed under the reactor pressure vessel head. The licensee stated that the job supervisor directed the workers to clean the reactor head o-ring grooves without coordinating the activity with radiation protection department personnel. The inspector determined that poor communications between the workers' supervisor and radiation protection department personnel resulted in poor radiation protection job coverage. This poor job coverage resulted in the failure to adequately instruct the workers in the use of appropriate protective clothing necessary to minimize their exposure due to skin contamination.

10 CFR 19.12(a)(2) states, in part, that all individuals who in the course of employment are likely to receive in a year an occupational dose in excess of 100 millirems shall be instructed in precautions to minimize exposure. The failure to instruct the workers cleaning the reactor pressure vessel head o-ring groove in the use of proper protective clothing to minimize their exposure from skin contamination was identified as the first example of a 10 CFR 19.12 violation. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Condition Report 1999-0551 (50-458/9904-02).

The inspector asked the contaminated workers if they were aware of the work area radiological conditions. The workers stated they believed the contamination levels were up to 60,000 disintegrations per minute. The inspector noted that the historical data section of Radiation Work Permit 99-1000-03, the radiation work permit used by the workers, indicated that contamination levels were as great as 60,000 disintegrations per minute. However, the radiation work permit stated that current contamination survey information was contained in the radiation work permit package.

The inspector asked the workers if they had reviewed the current radiological survey information contained in the radiation work permit package or received a briefing from radiation protection. The workers responded that they had not reviewed the current radiological survey information and had not been provided a briefing by radiation protection personnel prior to their initial entry under the reactor vessel head. The inspector noted that current radiological survey information taken under the reactor pressure vessel head indicated that contamination levels were as great as 40 millirad per hour per 100 square centimeters. The inspector determined that the failure to review the current radiological survey information contributed to the workers' failure to use the appropriate protective clothing while cleaning the reactor pressure vessel head o-ring grooves.

The inspector identified the following regulatory requirements:

- Technical Specification 5.4.1.a states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33 includes procedures for the Radiation Work Permit System.
- River Bend Nuclear Procedure RBNP-024, "Radiation Protection Plan," Revision 8, Section 7.2.2 states, "Adherence to the requirements of the radiation work permit is mandatory, and ensures that work in posted areas is performed in a radiologically safe manner."
- Radiation Work Permit 99-1000-03, Revision 0, Worker Instruction No. 7 states, "Personnel are to make themselves aware of current radiological conditions by: Reviewing survey data, observing local postings or by direct communication with radiation protection."

The failure of two workers, assigned to clean the reactor pressure vessel head o-ring groove on April 9, 1999, to obtain the current radiological conditions for the work area in accordance with Radiation Work Permit 99-1000-03 constituted a violation of Technical Specification 5.4.1.a. This is the first example of a violation for failure of radiation workers to adhere to radiation work permit requirements. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Condition Report 1999-0551 (50-458/9904-03).

In response to the inadequate prejob briefing identified on April 13, 1999, and the personnel contamination event involving workers under the reactor pressure vessel head, the licensee initiated a radiological stand down. The following instructions were presented to radiation protection personnel during the stand down (partial list):

- All job scope change briefings that occur with personnel already dressed out in protective clothing will have radiation protection supervision present and responsible for the brief.
- Workers must be briefed on radiological conditions and applicable radiation worker requirements before entering the contaminated area on the refueling floor.
- Workers must be able to describe the dose rates in their work area and know the general range of radiation levels and the locations of those ranges.
- Workers must be able to describe the contamination levels in their work area and know the general range of contamination levels and the locations in the work area.

Radiography Event

On April 27, 1999, at approximately 2:15 a.m., an unauthorized and unidentified individual entered an area where radiography was being performed. Licensee

representatives stated that the individual who entered the radiography area passed through two radiological barriers. The first radiological barrier was a magenta rope across the outside entrance doorway to the radiography area. A posting on the rope stated, "CAUTION, Radiation Area, Radiography in Progress, Keep Out." The second radiological barrier was inside the doorway to the radiography area. It was also a magenta rope with a posting which stated, "Danger, High Radiation Area, Radiography in Progress, Keep Out." A flashing red light was placed next to the second barrier to limit access to the area.

According to the radiographer in charge of the activity, an unauthorized individual entered the area in-between radiography exposures. The radiographer told the individual that he did not belong in the area and needed to exit immediately. The radiographer stated that the individual immediately left the area; however, the individual could not be located nor could the radiographer identify the individual. Since the radiographer was in-between exposures, the individual was not exposed to radiation from the radiography source. The inspector noted that the area where the radiography was being performed was in a room that contained two access doorways. The radiographer stated that prior to each radiography exposure, the area was verified to be clear of personnel. After the radiography source was exposed, both doors that provided access to the area were guarded until the exposure was complete. The source used for the April 24, 1999, radiography was a 95 curie Iridium-192 source which would produce a dose rate of approximately 500 rem per hour at 12 inches (30 centimeters) when withdrawn from its shielded container. In this particular instance, the radiography area was small and open which allowed the unauthorized individual to be observed and directed to leave prior to exposing the source.

The licensee informed the inspector that the only personnel who were authorized entry into the radiography area were those personnel signed onto Radiation Work Permit 99-00099-02. Accordingly, the inspector identified the entry of an individual into a radiographic area on April 24, 1999, without Radiation Work Permit 99-0009-02 authorization, as a second example of a Technical Specification 5.4.1.a violation. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Condition Report 1999-0723 (50-458/9904-03).

The inspector noted that Radiation Protection Procedure RPP-0005, "Posting Procedure," required an area accessible to individuals be posted as a locked high radiation area when radiation levels could result in an individual receiving a deep dose equivalent greater than or equal to 1 rem in 1 hour at 12 inches (30 centimeters) from the radiation source or from any surface that the radiation penetrates.

The inspector asked the licensee why the radiography area was not posted as a locked high radiation area. The licensee stated that the radiography areas were controlled in accordance with Quality Assurance Procedure QAP-1.18, "Radiation Safety Programs for Radiography," Revision 7. The inspector reviewed this procedure and noted that Section 6.8 contained the posting requirements to be used during radiography. Section 6.8.8 stated, in part, "Post the radiation area with an ample number of CAUTION - RADIATION AREA signs." Section 6.8.10 stated, in part, "Post calculated 100 millirem per hour area with DANGER - HIGH RADIATION AREA signs and identify

them with a flashing light as required to limit access." The inspector noted that this procedure did not address the use of locked high radiation area postings for areas where radiation exposures at 12 inches from a radiation source are greater than 1000 millirem per hour as required by Radiation Protection Procedure RPP-0005.

In pursuing this apparent discrepancy, the inspector noted that the postings used to control the radiography area also contained the words, "Radiography in Progress, Keep Out." The inspector asked the licensee if all employees who receive radiation worker training are taught that radiography activities conducted in the plant are neither posted nor controlled in accordance with the station radiation protection procedures. The licensee reviewed the training material used for general employee radiation worker training and determined that there were no instructions given to workers concerning radiography and the associated postings used to control a radiography area.

The inspector noted that the River Bend Station general employee training for radiation workers indicated that radiation area, high radiation area, and locked high radiation area postings were based on dose rates in the area, 12 inches from the source of radiation. Specifically, high radiation areas postings were used for areas that contained dose rates greater than or equal to 100 millirem per hour, but less than 1000 millirem per hour at 30 centimeters (12 inches) from the source of radiation. The inspector noted that the unauthorized and unidentified radiation worker who entered the radiography area on April 24, 1999, entered an area where radiation levels at 12 inches from the source were higher than the 1000 millirem per hour. Specifically, the unauthorized radiation worker entered a posted high radiation area where the radiation levels were up to 500,000 millirem per hour at 12 inches from the source of radiation when the source was exposed.

10 CFR 19.12(a)(1) states, in part, that all individuals who in the course of employment are likely to receive in a year an occupational dose in excess of 100 millirems shall be kept informed of the storage, transfer, or use of radiation and/or radioactive material. Accordingly, the failure to inform individuals of the storage, transfer, or use of radiation and/or radioactive material was identified as a second example of a 10 CFR 19.12 violation. Specifically, on April 29, 1999, a radiation worker entered a radiography area without being instructed in the radiation levels that could exist in the area (approximately 500 rem per hour at 12 inches from the source). This Severity Level IV violation is being treated as a noncited violation consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Condition Report 1999-0723 (50-458/9904-02).

Locked High Radiation Area Controls

The inspector reviewed Condition Report 1999-0135, issued February 4, 1999. This condition report documented that during radiation protection weekly locked high radiation door checks, licensee representatives discovered that both flashing lights located at the steam tunnel 95-foot entrance were not flashing. The inspector noted that on November 11, 1998, the licensee discovered, during routine locked high radiation area door checks, that the steam tunnel door was found with the locking mechanism not fully engaged. The licensee determined that the operability of the locking mechanism was in question. In response to this condition report, the licensee's corrective actions

were to control access to the locked high radiation area using locked high radiation area postings and flashing lights.

The inspector noted that in accordance with Technical Specification 5.7.3, the use of flashing lights and locked high radiation area postings to control a locked high radiation area is restricted to areas located within large areas such as the reactor containment, where no enclosure exists for purposes of locking or an area that is not continuously guarded and where no enclosure can be reasonably constructed.

The inspector determined that the licensee failed to recognize that this requirement did not allow the use of flashing lights and locked high radiation area postings for this situation. As a result of the licensee's misunderstanding, the maintenance action request to fix the locking mechanism on the locked high radiation door received a low priority. Subsequently, the locking mechanism was fixed on March 3, 1999, approximately 4 months after the operability of the locking mechanism was determined to be questionable.

The licensee stated that during the time the flashing lights were used, the door was verified closed. However, the door was not verified locked, since the flashing lights and locked high radiation area postings were being implemented to control access to the area. The inspector noted that the licensee reviewed personnel access records and dose records and verified that it was unlikely any personnel had made an unauthorized entry into the area.

The failure to lock or continuously guard the steam tunnel entrance was identified as a violation of Technical Specification 5.7.3. This Severity Level IV violation is being treated as a noncited violation consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Condition Report 1999-0598 (50-458/9904-04).

c. Conclusions

On the basis of the inspection sample, the overall implementation of the external exposure control program during the current refueling outage was weak as evidenced by the number of violations identified for the failure of radiation workers to follow radiation work permit requirements, an inadequate radiation protection prejob briefing, inadequate instructions to radiation workers, and poor radiation work supervisory oversight.

A violation of Technical Specification 5.4.1.a was identified for the failure to perform a documented, prejob briefing in accordance with Radiation Section Procedure RSP-0200, Revision 16. This violation is in the licensee's corrective action program as Condition Report 1999-0557. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy.

Two examples of Technical Specification 5.4.1.a violations were identified for the failure of personnel to adhere to radiation work permit requirements. These violations are in the licensee's corrective action program as Condition Reports 1999-0195, 1999-0427, 1999-0551, 1999-0564, and 1999-0723. These Severity Level IV violations are being

treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy.

Two examples of 10 CFR 19.12 violations were identified: one involved the failure to adequately inform workers in the storage, transfer, or use of radiation and/or radioactive material; and one involved the failure to adequately instruct individuals in precautions to minimize exposure. These violations are in the licensee's corrective action program as Condition Reports 1999-0723 and 1999-0551. These Severity Level IV violations are being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy.

A violation of Technical Specification 5.7.3 was identified for the failure to lock or continuously guard a locked high radiation area. This violation is in the licensee's corrective action program as Condition Report 1999-0598. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy.

R1.2 Internal Exposure Controls

a. Inspection Scope (83750)

Selected radiation protection personnel involved with the internal exposure control program were interviewed. The following items were reviewed:

- Respiratory protection program
- Whole-body counting program, including the calibration of the counter
- The internal dose assessment program
- High efficiency particulate air filtration unit use
- Air sampling program

b. Observations and Findings

River Bend Station Procedure R-PL-026, "Respiratory Protection Policy," Revision 1, Section 4, states, in part, that 100 percent of medically capable radiation protection technicians will be qualified to wear respiratory protection equipment, and 100 percent of senior licensed operators and nonlicensed operators will be qualified to wear respiratory protection equipment. The licensee informed the inspector that the procedure was being implemented in order to ensure that the appropriate number of personnel from various station departments were respirator qualified to support various plant conditions and also to implement the station's emergency plan.

The inspector requested the status of the station's departmental qualifications. The licensee informed the inspector that the radiation protection department and operations department were not meeting the requirement that 100 percent of the medically capable personnel be qualified. Specifically, two radiation protection personnel and five operations personnel were not qualified. While obtaining this information for the inspector, the licensee also identified that one radiation protection worker who was documented as qualified was actually not medically qualified to wear a respirator.

Company Procedure PL-140, Revision 1, states that only operators who stood watch were required to be respirator qualified. The inspector was informed that of the five operators originally identified, one operator had stood watch during a period where the individual was not qualified to wear a respirator.

Technical Specification 5.4.1.a states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33 includes procedures for the Respiratory Protection Program. Accordingly, the failure to maintain the appropriate personnel qualified to wear respirators (in accordance with Procedures R-PL-026 and PL-140) was identified as a violation of Technical Specification 5.4.1.a. This violation is in the licensee's corrective action program as Condition Reports 1999-0561 and 1999-0562.

Selected air sample records and whole-body counters were reviewed. The records were maintained in an orderly manner and no discrepancies were noted. The inspector reviewed selected internal uptake dose estimates and verified the estimates were performed appropriately. Whole-body counters were properly calibrated using National Institute of Standards and Technology traceable sources.

During a tour of the controlled access area, the inspector noted that several high efficiency particulate air filtration units were being used to control the spread of airborne contamination. The licensee had experienced fuel problems and, as a result, had obtained extra filtration units from other nuclear stations in the event they were needed. The inspector asked the licensee how often they were collecting air samples at the discharge of the filtration units, surveying the filter housings, and checking the differential pressure across the filter media to determine the effectiveness of the units. The licensee indicated that they were not taking samples, surveying the units, or checking the differential pressure at any frequency. The licensee informed the inspector that they had raised the same question earlier that day and were waiting for an answer from radiation protection personnel. The following day the inspector was shown a radiation protection technician surveillance schedule which included surveying and checking the differential pressure on the filtration units.

The inspector reviewed Radiation Protection Procedure RPP-0059, "Use of Portable HEPA Filtration Units, and Containments," Revision 6A. The inspector noted that Section 5.4 stated, "The differential pressure gauge will be checked as operational and within operating range after the unit is started." The inspector noted that the operating air filtration units' differential pressure gauges, except one, were reading between 1 and 2 inches of water. The other gauge read 6 inches of water. The inspector asked licensee personnel who were responsible for operation of the filtration units what the operating range of the units was. The inspector noted that the licensee did not know what the operating ranges were and would have to contact the nuclear stations from which the units were borrowed or the applicable manufacturer to obtain this information. The licensee initiated Condition Report 1999-0583 in response to this issue. Following the inspection, the licensee provided the inspector with information indicating that all the filtration units being used were operated within the appropriate operating range.

c. Conclusions

Whole-body counters were properly calibrated using sources traceable to the National Institute of Standards and Technology. Internal dose assessments were appropriately performed.

A violation of Technical Specification 5.4.1.a was identified for the failure to maintain the appropriate personnel qualified to wear respirators. This violation is in the licensee's corrective action program as Condition Reports 1999-0561 and 1999-0562. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy.

High efficiency particulate air filters were effectively used to reduce airborne contamination. However, air filter implementing procedures lacked detailed guidance to ensure the units were effectively operated.

R7 Quality Assurance in Radiation Protection Activities

R7.1 Radiological Condition Reports

a. Inspection Scope (83750)

The inspector reviewed the following condition reports for workers failing to follow radiation work permit requirements:

Condition Report 1999-0427
Condition Report 1999-0564
Condition Report 1999-0551

b. Observations and Findings

Condition Report 1999-0195 involved an operator who performed a tagout in the reactor building backwash tank room on February 18, 1999. The operator entered a posted high radiation area without contacting radiation protection or reviewing current radiological surveys as required by the worker's radiation work permit. Another worker who conducted an independent verification of the tagout, also entered the posted high radiation area without contacting radiation protection or reviewing current radiological surveys, as required by the worker's Radiation Work Permit 99-0003-00-L.

Condition Report 1999-0427 involved workers on the turbine building 123-foot level on April 4, 1999, who were not properly implementing the dress requirements when in a contamination area in accordance with Radiation Work Permit 99-3000-00. The radiation protection technician stopped the job at a safe point, briefed the crew on the appropriate dress requirements, then informed the radiation protection superintendent of the event.

Condition Report 1999-0564 involved workers who removed bags of used protective clothing in a contamination area on April 14, 1999. The workers were not properly

implementing the dress requirements in accordance with Radiation Work Permit 99-0011-07.

The failure of workers to adhere to radiation work permit requirements, as discussed in Condition Reports 1999-0195, 1999-0427, and 1999-0564 were identified as three additional examples of Technical Specification 5.4.1.a violations for the failure of radiation workers to adhere to radiation work permit requirements. These Severity Level IV violations are being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy (50-458/9904-03).

c. Conclusions

Three additional examples of Technical Specification 5.4.1.a violations were identified for the failure of personnel to adhere to radiation work permit requirements. These violations are in the licensee's corrective action program as Condition Reports 1999-0195, 1999-0427, and 1999-0564. These Severity Level IV violations are being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy.

R8 Miscellaneous Radiation Protection and Chemistry Issues

(Closed) Unresolved Item 50-458/9810-02: Compliance with 10 CFR 19.12

Two examples of 10 CFR 19.12 violations were identified: one involved the failure to adequately inform workers in the storage, transfer, or use of radiation and/or radioactive material; and one involved the failure to adequately instruct individuals in precautions to minimize exposure. Refer to Section R1.1 for details.

V. Management Meetings

X1 On June 2, 1999, a telephonic exit meeting was held to discuss the results of the inspections. The licensee acknowledged the findings presented. The licensee stated that corrective actions were in process to improve radiation protection program implementation. Corrective actions included an assessment of the radiation work permit program performed by Entergy corporate personnel, an assessment of the radiation protection program performed by outside specialists, a multidiscipline group who focused on revamping the radiation work permit program, increased practical factor training for radiation workers, improvements to the computer system controlling access to the controlled access area, and having radiation protection supervision present during all required radiological prejob briefings. No proprietary information was identified. The licensee was informed that a management meeting would be scheduled in the near future to further discuss the licensee's actions stemming from this inspection and its reviews.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Albert, Quality Specialist
J. Anderson, Quality Specialist
L. Ballard, Supervisor, Quality
B. Biggs, Nuclear Safety and Regulatory Affairs Coordinator
P. Campbell, Licensing
D. Deal, Supervisor, Radiation Control
R. Edington, Vice President
T. Hildebrandt, Manager, Maintenance
H. Holmes, Health Physics\Chemistry Specialist
V. Huffstatler, Health Physics Shift Supervisor
R. King, Director, Nuclear Safety and Regulatory Affairs
D. Lorfing, Supervisor, Licensing
B. Mashburn, Manager, Engineering Support
D. Mims, General Manager, Plant Operations
D. Myers, Senior Licensing Specialist
W. O'Malley, Operations Manager
D. Wells, Superintendent, Radiation Protection

NRC

G. Replogle, Senior Resident
G. Good, Chief, Plant Support Branch

INSPECTION PROCEDURE USED

83750 Occupational Radiation Exposure

ITEMS OPENED AND CLOSED

Opened and Closed

50-458/9904-01	NCV	Failure to perform adequate prejob briefing (Section R1.1)
50-458/9904-02	NCV	Failure to comply with 10 CFR 19.12 (Section R1.1)
50-458/9904-03	NCV	Failure to adhere to RWP requirements (Sections R1.1 and R7.1)
50-458/9904-04	NCV	Failure to properly control a locked high radiation area (Section R1.1)
50-458/9904-05	NCV	Failure to qualify appropriate personnel in respiratory protection (Section R1.2)

Closed

50-458/9810-02 URI Compliance with 10 CFR 19.12

LIST OF DOCUMENTS REVIEWED

Procedures

ADM-0028	Corrective Maintenance, Revision 17
GMP-0102	Reactor Vessel Disassembly, Revision 8
RBNP-024	Radiation Protection Plan, Revision 8
RBNP-030	Initiation and Processing of Condition Reports, Revision 13
RHP-0017	Calculation of Internal Dose, Revision 7
RHP-0025	Bioassay Sample Collection, Revision 6A
RHP-010	Operation of the Canberra Accuscan II and Fastscan Whole-Body Counter, Revision 2
R-PL 026	Respiratory Protection Policy, Revision 1
RPP-0024	Radiological Precautions for Underwater Diving Operations, Revision 7
RPP-0059	Use of Portable HEPA Filtration Units and Containments, Revision 6A
RSP-0005	Posting of Radiologically Controlled Areas, Revision 19
RPP-0105	Calibration of the Eberline PCM and TCM, Revision 1A
RPP-0117	Calibration of Portable Radiological Instruments, Revision 0A
RSP-0005	Posting of Radiologically Controlled Areas, Revision 19
RSP-0200	Radiation Work Permits, Revision 16
RSP-0217	Access Control, Revision 5
RSP-0213	Control and Handling of Radioactive Materials, Revision 12

Condition Reports

1999-0135
1999-0195
1999-0427
1999-0551
1999-0557
1999-0561
1999-0562
1999-0564
1999-0583
1999-0598
1999-0723