



Entergy Operations, Inc.  
River Bend Station  
5485 U.S. Highway 61  
P. O. Box 220  
St. Francisville, LA 70775  
Tel 225 336 6225  
Fax 225 635 5068

**Rick J. King**  
Director  
Nuclear Safety Assurance

January 4, 2002

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Subject: River Bend Station – Unit 1  
Docket No. 50-458  
License No. NFP-47  
Submittal of Revisions to Emergency Implementing Procedures

File No.: G9.5, G9.20.6

RBG-45895  
RBF1-02-0003

Ladies and Gentlemen:

Pursuant 10CFR50 Appendix E, Section V, enclosed is Emergency Implementing Procedure (EIP) 2-012 Revision 15. In accordance with 10CFR50.54(q), the changes to this procedure do not decrease the effectiveness of the Emergency Plan.

If you have any questions or require further information, please contact Michael Bakarich at (225)-378-3310.

Sincerely,

A handwritten signature in cursive script that reads "Rick J. King".

RJK/dnl  
enclosure

A1045

Submittal of Revision to the RBS Emergency Implementing Procedure

January 4, 2002

REG-45895

RBF1-02-0003

Page 2 of 2

cc: U. S. Nuclear Regulatory Commission (2)  
Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011

NRC Senior Resident Inspector  
P. O. Box 1050  
St. Francisville, LA 70775



**ENERGY**

**RIVER BEND STATION  
STATION SUPPORT MANUAL  
\*EMERGENCY IMPLEMENTING PROCEDURE**

---

***\*RADIATION EXPOSURE CONTROLS***

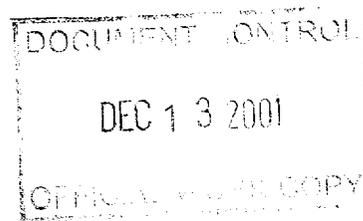
**PROCEDURE NUMBER:** \*EIP-2-012  
**REVISION NUMBER:** \*15  
**Effective Date:** \* DEC 13 2001

---

**NOTE : SIGNATURES ARE ON FILE.**

**\*INDEXING INFORMATION**

This procedure has been reviewed for 10CFR50.59 applicability. 10CFR50.59 screening for the programmatic exclusion of all EIP changes, approved by FRC on 7/10/97, concludes that further review of changes to this procedure under 10CFR50.59 are not necessary.



**RECEIVED**

DEC 13 2001

Drawing Control Center

**TABLE OF CONTENTS**

<b><u>SECTION</u></b>	<b><u>PAGE NO.</u></b>
1 PURPOSE .....	2
2 REFERENCES .....	2
3 DEFINITIONS .....	2
4 RESPONSIBILITIES .....	2
5 GENERAL .....	3
6 PROCEDURE .....	4
7 DOCUMENTATION.....	10
ATTACHMENT 1 - RADIATION EXPOSURE LIMITS AND GUIDELINES .....	11
ATTACHMENT 2 – THYROID COMMITTED DOSE EQUIVALENT GRAPH.....	13
ATTACHMENT 3 – POTASSIUM IODIDE ADMINISTRATION FORM.....	15
ATTACHMENT 4 – MEDICAL QUESTIONNAIRE: IODINE SENSITIVITY .....	16

OFFICIAL COPY

## 1 **PURPOSE**

This procedure provides instructions for establishing special radiation exposure controls during an emergency.

## 2 **REFERENCES**

- 2.1 Title 10, Code of Federal Regulations, Part 20, (10 CFR 20) "Standards for Protection Against Radiation"
- 2.2 RBNP-024, River Bend Station Radiation Protection Program
- 2.3 Company Procedure RP-101, Prenatal Exposure
- 2.4 NCRP Report No. 55, Protection of the Thyroid Gland in the Event of Releases of Radioiodine

## 3 **DEFINITIONS**

- 3.1 Committed Dose Equivalent (CDE) - The dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material during the 50 year period following the intake.
- 3.2 Total Effective Dose Equivalent (TEDE) - The sum of the Deep Dose Equivalent (DDE) (from external exposure) and the Committed Effective Dose Equivalent (CEDE) (from internal exposure).

## 4 **RESPONSIBILITIES**

- 4.1 Emergency Director (ED)- The ED is responsible for authorizing individuals to receive exposures in excess of 10 CFR 20 limits and approving the issuance of potassium iodide (KI).
- 4.2 Radiation Protection Coordinator (RPC) - The RPC is responsible for advising the ED, tracking the dose history for those individuals authorized to receive exposures in excess of 10 CFR 20 limits, and notifying the Nuclear Regulatory Commission of any overexposures.

- 4.3 Fully Qualified Radiation Protection Technician (FQRPT) - The FQRPT is responsible for performing the duties of the RPC per this procedure until his arrival at the Technical Support Center.

5 **GENERAL**

- 5.1 During a classified emergency, the administrative exposure controls of the River Bend Station Radiation Protection Program RBNP-024 are suspended; however, efforts shall be made to maintain personnel exposures within the limits established by 10 CFR 20.
- 5.2 Due to rapidly changing conditions during an emergency, administrative approvals for exceeding established exposure limits are suspended. Only the ED shall have the authority for authorizing exposures in excess of 10 CFR 20 limits (included as Attachment 1 for reference).
- 5.3 During the emergency phase of an accident, the Radiation Work Permit (RWP) provisions of the River Bend Radiation Protection Program are suspended, but shall be re-implemented at the termination of an emergency when the recovery phase is initiated.
- 5.4 Potassium Iodide (KI) (thyroid blocking agent) is available in the Control Room, Technical Support Center, Decontamination Room (Second Floor of the Services Building), Emergency Operations Facility (EOF) and the Offsite Monitoring Team Emergency Kits.
- 5.5 A declared pregnant female shall not be assigned any functions during a declared emergency which may cause her to exceed the dose limits of 10CFR20.1208 (See Attachment 1); however, a female who declares herself pregnant after an emergency is declared will be expected to continue to fulfill her assignment until a qualified relief can be found. In this case every effort will be made to limit the female's TEDE to the limits specified in Attachment 1, consistent with the needs of the Emergency Response Organization.

**PROCEDURE****NOTE**

*The actions of this procedure may be completed in any sequence, however, the sequence presented is recommended.*

## 6.1 The ED should:

6.1.1. Use 10CFR20 exposure limits contained in Attachment 1. These limits apply to all members of the Emergency Response Organization, whether or not every person has completed Radiation Worker Training.

6.1.2. When assigning members of the emergency organization to perform tasks which may result in exposures in excess of the 10 CFR 20 limits (see Attachment 1, Section A):

1. Consult with the RPC to determine the person's current exposure history to verify the amount of exposure the individual may receive without exceeding the 10 CFR 20 limit.
2. Authorize each individual a maximum exposure limit, not to exceed the limits in Attachment 1, Section B.

**NOTE**

*The Emergency Director shall initiate a log for the documentation of emergency information. The Operations Shift Superintendent shall use the Control Room log.*

3. Document the authorization of each individual in the ED's log.
  4. In accordance with the Entergy Operations Inc. policy concerning exposures to females who may be pregnant, no female who suspects she is pregnant should be assigned any responsibilities during an emergency which could result in exposures in excess of the 10 CFR 20 limits.
- 6.1.3. Ensure that any individual believed to have received greater than 25 rem (250 mSv) TEDE is promptly relieved from the Emergency Response Organization.

**NOTE**

*SCBA's and other masks **do not** preclude the consideration of the dissemination of KI.*

6.1.4. Authorize the use of KI, as necessary.

6.2 The RPC should:

6.2.1. Ensure that current exposure margins are readily available for the emergency organization.

6.2.2. When time permits, consult with the ED on the methods available to prevent excessive exposures during the emergency.

**NOTE**

*SCBA's and other masks **do not** preclude the consideration of the dissemination of KI.*

6.2.3. Consult with the ED regarding the use of KI by emergency response personnel involved in actions to save a life of another individual, mitigate accident consequences, or prevent major releases of radioactivity to the environment I.A.W. Section 6.4

6.2.4. Inform emergency workers who are authorized emergency exposure in excess of 10 CFR 20 limits regarding the relative risks involved with excessive radiation exposure.

6.2.5. Determine the need to process emergency worker TLDs.

6.2.6. Initiate efforts to obtain a medical evaluation of any individual who receives greater than 25 rem (250 mSv) TEDE, during emergency operations by a physician who is familiar with acute effects of radiation exposure. After the emergency is terminated, these individuals shall not be subjected to any further radiation exposure until approved by the Superintendent of Radiation Control and the General Manager of Plant Operations.

**NOTE**

*The following notification will be made in accordance with the reporting requirements of 10 CFR 20.2202 and 20.2203.*

- 6.2.7. As soon as practical during an emergency, make oral reports of radiation overexposures to the Nuclear Regulatory Commission followed by a written report. Written reports should be provided within 30 days as provided by 10 CFR 20.2203 except when the emergency continues for more than 30 days, then the written report shall be provided within 24 hours after termination of the emergency.
  - 6.2.8. Ensure that TEDE dose received during an emergency is recorded on each individual's dose history file. All occupational doses, including emergency doses, are required to be included as part of an individual's accumulated dose history and can affect the individual's allowable exposure during the current and subsequent years.
  - 6.2.9. Ensure that declared pregnant females do not exceed the dose limits specified in Attachment 1, and that radiation doses to females, who declare themselves pregnant after the declaration of an emergency, are limited to the extent practical to the limits specified in Attachment 1, consistent with the needs of the Emergency Response Organization.
- 6.3 The FQRPT should:
- 6.3.1. Assume duties of the RPC per this procedure until position is filled.
  - 6.3.2. Assist in evaluating radiation exposure levels likely to be encountered during emergency operations.

**NOTE**

*Completion of KI attachments are not required unless a worker's thyroid CDE is expected to be  $\geq 25$  Rem. Attachment 2 may be used as a reference without completion of Attachments 3 or 4.*

6.4 Administration of Iodine Blocking Agents.

6.4.1. Assessing the Need to Issue KI

1. If a worker's thyroid CDE is expected to approach 25 Rem, obtain a copy of Attachment 2, Thyroid Committed Dose Equivalent Graph, and estimate the dose commitment for the thyroid.
2. Verify your calculations/measurements/estimates and record the results on Attachment 3, Potassium Iodide Administration Form.
3. Report the results to the ED and advise him as to the need to issue KI in accordance with this procedure.
4. The Emergency Director may approve the issuance of KI via telecon/radio.

6.4.2. KI Issuance Requirements

1. When thyroid CDE is estimated to be 25 rem or greater the following are required:
  - The ED shall designate the individuals who will receive KI.
  - The individual to receive KI must voluntarily elect to take KI.
  - The individual to receive KI shall read Potassium Iodide precaution information provided by the drug company. The individual shall then complete the appropriate sections of Attachment 4 -Medical Questionnaire: Iodine Sensitivity and Attachment 3 - Potassium Iodide Administration Form.

6.4.3. Distribution of KI

**NOTE**

*KI is stored in the following locations: Control Room, Technical Support Center, Decontamination Room (second floor of the Services Building), Emergency Operations Facility and Offsite Monitoring Team Emergency Kits.*

1. Assemble the individuals who were designated to receive KI and the individuals to administer the KI.
2. Provide the individuals designated to receive KI with copies of:
  1. Potassium Iodide precaution information provided by the drug company.
  2. Attachment 4 –Medical Questionnaire: Iodine Sensitivity.
  3. Attachment 3 - Potassium Iodide Administration Form
3. Ensure personnel read and complete the appropriate sections of the above.

6.4.4. Guidelines for the Administration of KI

**NOTE**

*The Emergency Director can authorize the administration of KI in the field after the Field Monitoring Team members have complied with the guidelines of this procedure. Completion of the KI documentation may be accomplished at the convenience of the Emergency Director.*

1. If possible, KI should be administered approximately one-half hour before exposure for maximum blockage.
2. Final uptake is halved if KI is administered within 3-4 hours after exposure.
3. Little benefit is gained with KI administration 10-12 hours after exposure.
4. Once the KI is taken and the Iodine concentration is verified or the calculated dose determined, the tablets should be issued for a minimum of six (6) to a maximum of ten (10) consecutive days. One tablet is issued each day.
5. Verify that each individual receiving KI has completed and signed Attachments 3 and 4.
6. Verify that there are no "YES" blocks checked on Attachment 4, Medical Questionnaire: Iodine Sensitivity.
7. Individuals who have answered "YES" to any question on Attachment 4, Medical Questionnaire: Iodine Sensitivity, will initially be considered to be iodine sensitive and must be treated as follows:
  1. The individuals will be relocated or replaced to eliminate or minimize the uptake of radioiodine in the thyroid gland, or
  2. The individuals WILL NOT receive KI without the Radiation Protection Coordinator's authorization (after evaluation of the "YES" answer and the Emergency Director's concurrence).
8. Issue each individual designated to receive KI one (1) 130 mg KI tablet.

9. Forward all completed paperwork to the Radiation Protection Coordinator.

#### 6.4.5. Final Conditions

1. Ensure that each individual whose estimated exposure to radioiodine exceeded 25 rem has been identified and administered KI, as appropriate.
2. Ensure all necessary forms are completed and reviewed by the Radiation Protection Coordinator and the Emergency Director.
3. Ensure that each individual who was exposed to radioiodine with a calculated thyroid CDE  $\geq$  25 Rem has been scheduled for bioassay analysis.

## 7 DOCUMENTATION

- 7.1 Attachments 3 and 4 of this procedure, completed during actual events shall be submitted to permanent plant files (PPF) per EPP-2-100. Attachments from exercises/drills and tests will be used to critique and evaluate exercises/drills and test performance. This documentation will not be sent to PPF and may be discarded.

## RADIATION EXPOSURE LIMITS AND GUIDELINES

### A. 10CFR20 RADIATION EXPOSURE LIMITS

5 rem/yr. (50 mSv/yr.) Total Effective Dose Equivalent (TEDE) to the whole body.

50 rem/yr. (500 mSv/yr.) sum of the Deep Dose Equivalent (DDE) and the Committed Dose Equivalent (CDE) to an individual organ or tissue other than the lens of the eye.

15 rem/yr. (150 mSv/yr.) Eye Dose Equivalent (LDE) to the eye.

50 rem/yr. (500 mSv/yr.) Shallow Dose Equivalent (SDE) to the skin or an extremity.

50 mrem (0.5 mSv) in a one month period for a declared pregnant female, not to exceed 500 mrem (5 mSv) for the entire 9 month pregnancy period (10CFR20.1208).

### B. GUIDELINES FOR EMERGENCY EXPOSURES

1. Emergency Total Effective Dose Equivalent (TEDE) limits are:

- a. 5 rem (50 mSv) for preplanned emergency actions.
- b. 5 rem (50 mSv), in addition to any other dose received, for Post Accident Sampling.
- c. 10 rem (100 mSv) for immediate actions taken to prevent major damage to equipment, prevent the release of radioactive materials, or control fires.
- d. 25 rem (250 mSv) without consent and 75 rem (750 mSv) on a voluntary basis for action to save a life or to protect large populations.

2. Committed Dose Equivalent to the Thyroid

#### NOTE

*Although RBS Emergency Plan Table 13.3-10 establishes thyroid exposure guidelines, the difficulty in monitoring thyroid exposure over a short period of time prevents use of these numbers as absolute limits. Therefore, when radioiodine airborne concentrations are known, projected thyroid doses will be calculated to prevent exceeding these guidelines.*

- a) To save the life of another individual there is no specified limit. Although respirators should be used where effective to control the dose to emergency workers, thyroid dose should not be a limiting factor for lifesaving missions.

**RADIATION EXPOSURE LIMITS AND GUIDELINES**

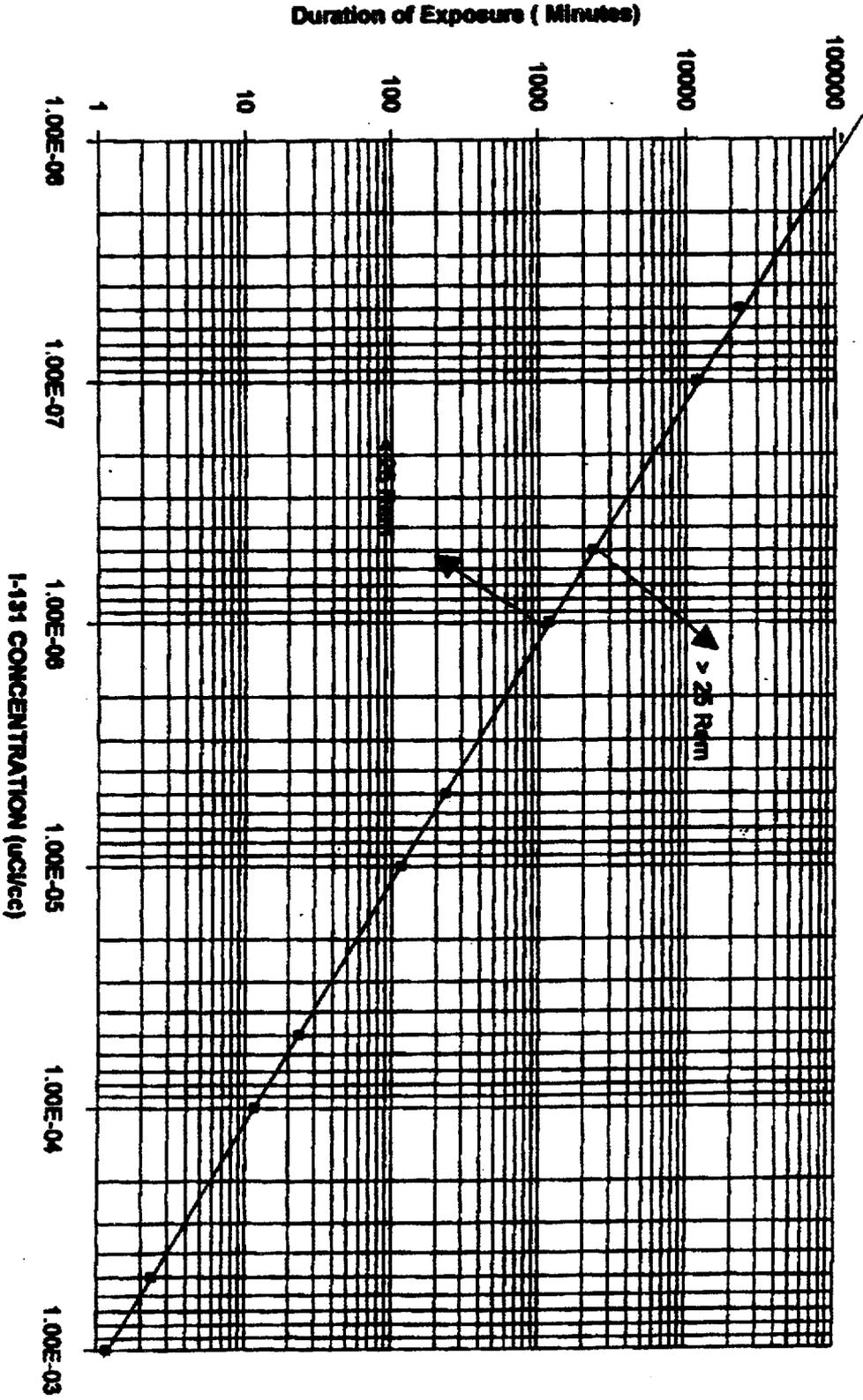
- b) To mitigate accident consequences and prevent major releases of radioactivity to the environment or control fires- 100 rem (1 Sv) Committed Dose Equivalent (CDE).
  - c) Emergency duties including decontamination and first aid, but not related to protecting equipment, the public or for lifesaving - 50 rem (500 mSv) CDE.
3. Shallow Dose Equivalent to the Extremities
- a) To save the life of another individual, extremity exposure should not be a factor.
  - b) To mitigate accident consequences and prevent major release of radioactivity to the environment - 100 rem (1 Sv) Shallow Dose Equivalent (SDE).
  - c) When preplanned emergency actions are possible -50 rem (500 mSv) SDE.

**THYROID COMMITTED DOSE EQUIVALENT GRAPH**

Instructions for Use:

1. Determine the estimated or actual I-131 airborne concentration in the area(s) of interest. Divide this by the protection factor of the equipment used (if unknown, use 1). Locate this number on the Horizontal Axis.
2. Locate the duration of exposure in minutes on the Vertical Axis. Find the point at which this value intersects with the number from step 1.
3. If this point of intersection is located to the left (below) the line, the thyroid CDE is less than 25 rem.
4. If this point of intersection is located to the right (above) the line, the thyroid CDE is greater than 25 rem.
5. If this point of intersection is located on the line, the thyroid CDE is 25 rem.

THYROID COMMITTED DOSE EQUIVALENT GRAPH



THYROID COMMITTED DOSE EQUIVALENT GRAPH

POTASSIUM IODIDE (KI) ADMINISTRATION FORM

Name of Exposed Individual: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Last First Middle

Social Security Number: \_\_\_\_\_ KCN: \_\_\_\_\_

Duration of Exposure: \_\_\_\_\_ I-131 Concentration: \_\_\_\_\_  
Minutes  $\mu\text{Ci/cc}$  in air

Estimated Thyroid Dose Commitment: (Check one)  < 25 Rem   $\geq$  25 Rem

Date of Exposure: \_\_\_\_\_

Respiratory Protection Worn During Exposure: (Check One)  Yes  No

Respiratory Protection Factor: \_\_\_\_\_

Known Iodide Allergy/Previous Allergic Reaction: (Check One)

Yes  No

**CAUTION**

If the above allergic reaction box is checked 'Yes', then do not administer KI.

I verify that I have read and understand the precaution leaflet. I understand that taking thyroid blocking agent (KI) is strictly voluntary.

I (Check One)  Do  Do Not choose to take KI.

\_\_\_\_\_  
Signature of Exposed Individual Date

Approved: \_\_\_\_\_  
Emergency Director Date

Check if approval is via telecon/radio.

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**MEDICAL QUESTIONNAIRE: IODINE SENSITIVITY**

Name: \_\_\_\_\_  
                    First                    Middle                    Last

Company/Department: \_\_\_\_\_

**Check Yes or No**

1. Have you any known allergies? If so, please describe major severity of allergy and medications taken if any.  Yes  No
2. When eating seafood or shellfish, do you suffer from symptoms of stomach or bowel upset or skin eruption? If so, explain.  Yes  No
3. Has any physician told you that you have a sensitivity to iodine?  Yes  No
4. If you have you ever had a gallbladder dye test, kidney x-ray requiring dye injection, thyroid isotope scan, did you have any reactions?  Yes  No

5. Please explain any yes answers: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_