LOUISIANA
PEACETIME RADIOLOGICAL
RESPONSE PLAN
(LPRRP)

REP&R

State of Louisiana ▪ Radiological Emergency Planning & Response

est. 1979

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DECEMBER 2015

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Revision Log

Revision	Date	Notes
9	5/00	LDEQ
9-update	5/00	LDEQ
10	10/05	LDEQ
10-update	6/30/10	Includes updates from GGNS COLA, RBS COLA & W3SES SES Plan Review
10-update-2	8/31/10	Added Ochsner Flight Care to ambulance services.
11	1/5/11	Complete revision
11-Update	8/29/13	Removed Ochsner Flight Care from ambulance services
12	12/13	Complete revision – Added Hostile Action for RBS
13	12/14	Complete revision – Implementation of Internet Based Notification System, Locations update (GGNS JIC , St. Charles Parish EOC, East Feliciana Parish EOC, Tensas Parish EOC, Reception Center), NUREG-0654, Supp. 3, FLEX Strategy
14	12/15	Complete revision

Foreword

This plan, consisting of the Basic Plan and site specific Attachments, was prepared by the Louisiana Department of Environmental Quality (LDEQ). This plan incorporates final guidance and direction specified in "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and preparedness in Support of Nuclear Power Plants," NUREG 0654, FEMA- REP-1, Rev-1, November 1980. The offsite protective action guidance comes from "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," EPA 400-R-92-001, May 1992. This plan provides the basis for offsite response for all state and local government agencies, as well as volunteers and/or other authorized individuals or agencies who would be called upon in the event of a radiological incident at one of the fixed nuclear facilities (nuclear power plants) having the potential for affecting the population and/or the environment of the State of Louisiana. The three facilities associated with this plan are:

1. Waterford Steam Electric Station, Unit No. 3 (W3SES), Taft, Louisiana;
2. Grand Gulf Nuclear Station (GGNS), Port Gibson, Mississippi;
3. River Bend Station (RBS), St. Francisville, Louisiana.

This plan in its entirety is a component of the Louisiana Emergency Operations Plan and appears as Supplement 2 of the document.

Louisiana Department of Environmental Quality

Signature Page

This plan is declared official and Revision 14 is effective upon receipt. Parish authentication and approval for site-specific local response plan is documented in the three separate Attachments.

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Louisiana Peacetime Radiological Response Plan

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Supplement 2: Fixed Nuclear Facilities to Louisiana Emergency Operations Plan

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1 Waterford 3 Steam Electric Station

Enclosure I – St. Charles Parish Radiological Emergency Response Plan

Enclosure II – St. John the Baptist Radiological Emergency Response Plan

2 Grand Gulf Nuclear Station

Enclosure I – Tensas Parish Radiological Emergency Response Plan

3 River Bend Station

Enclosure I – East Baton Rouge Parish Radiological Emergency Response Plan

Enclosure II – East Feliciana Parish Radiological Emergency Response Plan

Enclosure III – Pointe Coupee Parish Radiological Emergency Response Plan

Enclosure IV – West Baton Rouge Parish Radiological Emergency Response Plan

Enclosure V – West Feliciana Parish Radiological Emergency Response Plan

LPRRP NUREG-0654 Cross Reference

CRITERIA	REFERENCE†
A.1.a	LPRRP, Basic Plan, Sections IV, VI, and VII; Attachments 1, 2, and 3
A.1.b	LPRRP, Basic Plan, Sections IV, VI; Attachments 1, 2, and 3
A.1.c	LPRRP, Basic Plan, Section VI, Figure 1
A.1.d	LPRRP, Basic Plan, Section V; Attachments 1, 2, and 3
A.1.e	LPRRP, Chapter 3, Section III.A.4; Attachments 1, 2, and 3
A.2.a	LPRRP, Basic Plan, Section VI, Figure 1; Attachments 1, 2, and 3
A.2.b	LPRRP, Basic Plan, Section I.B
A.3	LPRRP, Chapter 14; Attachments 1, 2, and 3
A.4	LPRRP, Basic Plan, Section V; Sections VI.A.3, 4, VI.B , Figure 1 to Section VI
C.1.a	LPRRP, Basic Plan, Section V.B
C.1.b	LPRRP, Basic Plan, Section VII.A
C.1.c	LPRRP, Basic Plan Section VII.A and B, Attachments 1, 2 and 3
C.2.a	LPRRP, Basic Plan, Section IV.G
C.3	LPRRP, Basic Plan, Section VII.B; LPRRP, Chapter 6, Tab 5
C.4	LPRRP, Basic Plan, Section VII, LPRRP, Chapter 14
C.6	LPRRP, Attachments 1, 2, and 3, Appendices (Withhold under 10 CFR 2.390)
D.3	LPRRP, Chapter 1; Attachments 1, 2, and 3
D.4	LPRRP, Chapter 7, Sections III and IV.A; Attachments 1, 2, and 3
E.1	LPRRP, Chapter 2 and Chapter 3
E.2	LPRRP, Basic Plan, Sections VI.A.5, Chapter 3, Tab 3 to Chapter 6, III; Attachments 1, 2, and 3
E.5	LPRRP, Chapter 4; LPRRP, Chapter 5, Section IV.B; Attachments 1, 2, and 3
E.6	LPRRP, Chapter 4, Section IV; Attachments 1, 2, and 3
E.7	LPRRP, Chapter 4, Attachments 1, 2, and 3
F.1.a	LPRRP, Chapter 3, Section III.A and Chapter 4; Attachments 1, 2, and 3
F.1.b	LPRRP, Chapter 3, Sections III.A and III.B and Chapter 4; Attachments 1, 2, and 3
F.1.c	LPRRP, Chapter 3, Section III.E; Attachments 1, 2, and 3
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G.2	LPRRP, Chapter 5, Section IV.A.; Attachments 1, 2, and 3
G.3.a	LPRRP, Chapter 5, Section IV.B; Attachments 1, 2, and 3

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G.4.a	LPRRP, Chapter 5, Section IV.B; Attachments 1, 2, and 3
G.4.b	LPRRP, Chapter 5, Section IV.B; Attachments 1, 2, and 3
G.4.c	LPRRP, Chapter 5, Section IV.B.4; Attachments 1, 2, and 3
G.5	LPRRP, Chapter 5, Section IV.A.8; Attachments 1, 2, and 3
H.3	LPRRP, Basic Plan, Section IV.F; Attachments 1, 2, and 3
H.4	LPRRP, Basic Plan, Sections VI.A.6, VI.B.4.u, DEQ OP-2, OP-10, and OP-19
H.7	LPRRP, Basic Plan, Section IV.G; LPRRP, Chapter 6, Section III.A and Tabs 3 and 4
H.10	LPRRP, Chapter 6, Tab 3, and Tab 4
H.11	LPRRP, Chapter 6, Tab 3, Paragraph D, F and Table 1
H.12	LPRRP, Chapter 6, Section III.A and Tab 3, Paragraphs II.A, III.D and III.E
I.7	LPRRP, Chapter 6, Tab 3
I.8	LPRRP, Chapter 6, III. B, Tab 3 and Tab 5
I.9	LPRRP, Chapter 6, Tab 3, III. D and III. E
I.10	LPRRP, Chapters 6, 7, 8 and 11
I.11	LPRRP, Chapter 6, Tab 3, Paragraph G
J.2	LPRRP, Chapter 7, Section III.E; Attachments 1, 2, and 3
J.9	LPRRP, Chapter 7, Sections III.C and IV; LPRRP, Chapter 8, Section IV and Tabs 2 and 3
J.10.a	LPRRP, Basic Plan, Section VI.B.4.v; LPRRP, Chapter 5, Section IV.A.5; Attachments 1, 2, and 3
J.10.b	Attachments 1, 2, and 3
J.10.c	LPRRP, Chapter 4; Attachments 1, 2, and 3
J.10.d	LPRRP, Chapter 7, Section III.F.4; Section IV.A.4,A.5; Section IV.B.3, B.4
J.10.e	LPRRP, Chapter 7, Section IV.A.5; Section IV.B.2 and 3; LPRRP, Chapter 9, Section V.B.2 and Tab 1
J.10.f	LPRRP, Chapter 9
J.10.g	LPRRP, Chapter 7, Section III.B.2 & 3; Attachments 1, 2, and 3
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J.10.j	LPRRP, Chapter 7, Section IV.A.3; Attachments 1, 2, and 3
J.10.k	LPRRP, Chapter 7, Section III.F.3
J.10.l	Attachments 1, 2, and 3
J.10.m	LPRRP, Chapter 7, Section IV
J.11	LPRRP, Chapter 8
J.12	LPRRP, Chapter 9, Section IV.B
K.3.a	LPRRP, Chapter 6, Tab 3, Table 1; LPRRP Chapter 9, Sections III.A, V.B. and V.D; Attachments1, 2, and 3
K.3.b	LPRRP, Chapter 9, Section V.B.; Attachments 1, 2, and 3
K.4	LPRRP, Chapter 9, Sections V.B and V.D

CRITERIA	REFERENCE†
K.5.a	LPRRP, Chapter 9, Sections III and IV Attachments 1, 2, and 3
K.5.b	LPRRP, Chapter 9, Section V.C; Attachments 1, 2, and 3
L.1	LPRRP, Chapter 10, Section IV.B, Tabs 3 and 4,; Attachments 1, Appendix H, 2, Appendix H and 3, Appendix H
L.3	LPRRP, Chapter 10, Section IV.B and Tabs 1 and 3
L.4	LPRRP, Chapter 10, Section IV.A and Tab 2
M.1	LPRRP, Chapter 11
M.3	LPRRP, Chapter 11, Section III.G
M.4	LPRRP, Chapter 11, Section III.J
N.1.a	LPRRP, Chapter 13, Section III.A
N.1.b	LPRRP, Chapter 13, Section III.A
N.1.d	LPRRP, Chapter 13, Section III.A, B, and C
N.2.a	LPRRP, Chapter 13, Section IV.A
N.2.c	LPRRP, Chapter 13, Section IV.D
N.2.d	LPRRP, Chapter 13, Section IV.B
N.2.e (1)	LPRRP, Chapter 13, Section IV.C
N.3.a	LPRRP, Chapter 13, Section V
N.3.b	LPRRP, Chapter 13, Section V
N.3.c	LPRRP, Chapter 13, Section V
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O.4.h	LPRRP, Chapter 12, Section III
O.4.i	LPRRP, Chapter 12, Section III
O.4.j	LPRRP, Chapter 12, Section III
O.5	LPRRP, Chapter 12, Section III
P.1	LPRRP, Chapter 12, Section IV

CRITERIA	REFERENCE†
P.2	LPRRP, Basic Plan, Section V.B
P.3	LPRRP, Basic Plan, Section V.B; Attachments 1, 2, and 3
P.4	LPRRP, Basic Plan, Sections VIII.B and VIII.D4
P.5	LPRRP, Basic Plan, Section VIII.B , C, and Tab 1
P.6	LPRRP, Basic Plan, Section VIII, Tab 2
P.7	LPRRP, Basic Plan, Section VIII, Tab 2
P.8	LPRRP, TOC, p. v LPRRP NUREG-0654 Cross Reference, p. viii; Attachments 1, 2, and 3
P.10	LPRRP, Basic Plan, Section VIII.D.5

† For more details on Attachments 1, 2, and 3 NUREG-0654 Cross References, please see their respective NUREG-0654 Cross Reference Table in:

- Attachment 1 – Waterford 3 SES
- Attachment 2 – Grand Gulf Nuclear Station
- Attachment 3 – River Bend Station

Acronyms

ARIO	-	Advanced Radiological Incident Operations
ARS	-	American Radiation Services International
BDBEE	-	Beyond Design Basis External Events
CDE	-	Committed Dose Equivalent
CDP	-	Center for Disaster Preparedness
CEDE	-	Committed Effective Dose Equivalent
DHH	-	Department of Health and Hospitals
DIL	-	Derived Intervention Level
DOE	-	U .S. Department of Energy
EAS	-	Emergency Alert System
EBS	-	Emergency Broadcast System
EDE	-	Effective Dose Equivalent
EMAP	-	Emergency Medical Assistance Program
EMI	-	Emergency Management Institute
EOC	-	Emergency Operations Center
EOF	-	Emergency Operations Facility
EPA	-	Environmental Protection Agency
EPZ	-	Emergency Planning Zone
ETE	-	Evacuation Time Estimate
FDA	-	U.S. Food and Drug Administration
FEMA	-	Federal Emergency Management Agency
FMT	-	Field Monitoring Team
FRERP	-	Federal Radiological Emergency Response Plan
FRMAC	-	Federal Radiological Monitoring and Assessment Center
FRMAP	-	Federal Radiological Monitoring and Assessment Plan
GGNS	-	Grand Gulf Nuclear Station
GOHSEP	-	Governor's Office of Homeland Security and Emergency Preparedness
HAB	-	Hostile Action Based
HQ	-	Headquarters
IPZ	-	Ingestion Planning Zone (50-mile EPZ)

JIC	-	Joint Information Center
KI	-	Potassium Iodide
LDEQ	-	Louisiana Department of Environmental Quality
MOU	-	Memorandum of Understanding
NOAA	-	National Oceanic and Atmospheric Administration
NELA	-	Northeast Louisiana Ambulance
NRC	-	U.S. Nuclear Regulatory Commission
NRF	-	National Response Framework
OSL	-	Optically Stimulated Luminescent Dosimeter
PAA	-	Protective Action Area
PAD	-	Protective Action Decision
PAG	-	Protective Action Guide
PAR	-	Protective Action Recommendation
PAS	-	Protective Action Section
RAAC	-	Radiological Accident Assessment Concepts
RBS	-	River Bend Station
REPP	-	Radiological Emergency Preparedness Planning
REPR	-	Radiological Emergency Planning and Response
RERO	-	Radiological Emergency Response Operations
RTM	-	Response Technical Manual
SAFER	-	Strategic Alliance for FLEX Emergency Response
SIP	-	Shelter in Place
SMRAP	-	Southern Mutual Radiation Assistance Plan
SOP	-	Standard Operating Procedures
T/ACP	-	Traffic/Access Control Point
TEDE	-	Total Effective Dose Equivalent
TLD	-	Thermoluminescent Dosimeter
USDA	-	United States Department of Agriculture
W3SES	-	Waterford 3 Steam Electric Station

SECTION I

Introduction

A. Background Statement

The Louisiana Peacetime Radiological Response Plan (LPRRP), subsequently referred to as the Plan, has been prepared by the Louisiana Department of Environmental Quality. This Plan provides the basis for off-site response for all State and local government agencies, as well as volunteers or other authorized individuals who would be called upon in the event of a radiological incident having the potential for affecting the population or the environment of the State of Louisiana. The Plan has three Attachments:

- Attachment 1. Waterford 3 Steam Electric Station
- Attachment 2. Grand Gulf Nuclear Station
- Attachment 3. River Bend Station

This Plan has been developed with the intent of establishing and maintaining the highest possible standards for off-site response to radiological accidents in accordance with Federal and State regulations and guidelines. The Plan's principal goal is to provide adequate and timely public response to accidents covering a full range of possible conditions.

The Plan in its entirety is a component of the Louisiana Emergency Operations Plan and appears as Supplement II of that document.

The Plan is continually undergoing revision, updating and reassembly by the REP&R unit of LDEQ as required. When changes are completed, holders of the plan will be provided with the finalized change package to bring their copies up to date. Procedures for the distribution of these materials can be found in Section VIII, Administration, of this Plan.

B. Authority

1. State

   a. The Louisiana Homeland Security and Emergency Assistance and Disaster Act

   b. The Louisiana Environmental Quality Act, La. R. S. 30:2001 et seq.

2. Local

   Ordinances or resolutions enacted pursuant to requirements or authorities cited in the Plan.

3. Federal

a. Federal Civil Defense Act of 1950, as amended 50 USCA App.2251 et seq.

b. Stafford Disaster Relief and Emergency Assistance Act, P. L. 101-707

C. References & Supporting Documents

1. State

a. Louisiana Emergency Operations Plan

b. Southern Mutual Radiation Assistance Plan (SMRAP)

2. Federal

a. U.S. Nuclear Regulatory Commission

i. “Response Coordination Manual 1996 (RCM-96)” NUREG/BR-0230, September, 1996

ii. “Response Technical Manual (RTM)”, NUREG/BR-0150, Vol. 1, Rev. 5

iii. “Reactor Safety Study: An Assessment of Accident Risks in US Commercial Nuclear Power Plants,” WASH-1400 (NUREG-75/014), October 1975, Appendix VI

b. U.S. Nuclear Regulatory Commission and the Federal Emergency Management Agency

i. Memorandum of Understanding for Incident Response between the Federal Emergency Management Agency and the U.S. Nuclear Regulatory Commission, October 22, 1980.

ii. "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” NUREG 0654, FEMA REP-1, Rev. 1, November 1980

iii. Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Guidance for Protective Actions Strategies, NUREG-0654, FEMA REP-1, Supplement 3, November 2011

iv. Program Manual Radiological Emergency Preparedness

c. Federal Emergency Management Agency

i. "Guidance on Off-Site Emergency Radiation Measurement Systems, Phase 1 - Airborne Release,” FEMA-REP-2, Rev.2, June 1990

ii. "Guidance on Offsite Emergency Radiation Measurement systems, Phase 2 - The Milk Pathway," FEMA REP-12, September 1987

iii. "Guidance on offsite Emergency Radiation Emergency Systems, Phase 3, Water and Non-Dairy Food Pathway," FEMA-REP-13, May 1990

d. Code of Federal Regulations

i. Title 10, Parts 50 and 70

ii. Parts 350 and 351

e. National Response Framework: Nuclear/Radiological Incident Annex; June 2008

f. U.S. Environmental Protection Agency

i. "Manual of Protection Action Guides and Protective Actions for Nuclear Incidents," EPA 400-R-92-001 May 1992, as revised

ii. "National Interim Drinking Water Regulations," December 24, 1975

g. Federal Radiological Monitoring and Assessment Center (FRMAC), "Operations Manual," DOE/NV 25946/980 Rev. 0, May 2010

h. U.S. Food and Drug Administration

i. "Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies", August 13, 1998

ii. "Guidance Levels for Radionuclides in Domestic and Imported Foods," FDA/ORA CPG 7119.14 Sec. 560.750

i. Radiological Assistance Program Regional Response Plan Revision 2, April, 2014

3. <u>Facility</u>

a. Grand Gulf Nuclear Station

i. Entergy Operations, Inc. (EOI), Emergency Plan for Grand Gulf Nuclear Station

ii. Updated Final Safety Analysis Report (UFSAR)

iii. Grand Gulf Nuclear Station Evacuation Time Estimate, KLD Engineering, P.C. Rev.1, 2012

b. River Bend Station

i. Entergy Operations, Inc. (EOI), Emergency Plan for River Bend Station

ii. Updated Safety Analysis Report (USAR)

iii. River Bend Station Evacuation Time Estimate, KLD Engineering, P.C. Rev. 1, 2012

c. Waterford-3 Steam Electric Station

i. Entergy Operations, Inc. (EOI), Emergency Plan for Waterford Steam Electric Station, Unit No. 3

ii. Updated Final Safety Analysis Report (UFSAR)

iii. Waterford 3 Steam Electric Station Evacuation Time Estimate KLD Engineering, P.C. Rev. 1, 2012

SECTION II

General

A. Definitions

1. **Access Control Point** - A pre-designated location manned by Parish Sheriff's Deputies, the State Police or by the National Guard in order to prevent entry into the risk area during an accident. These points will be located on or immediately beyond the perimeter of the risk area.

2. **Activated** – An Emergency Operation Center is considered activated as soon as notification of an incident is received and the Director makes the determination to activate the facility. The facility is not considered operational until it is ready to carry out full emergency operations with key decision makers in place.

3. **Central Resource Receiving Point** - A predetermined location outside the plume exposure pathway EPZ suitable for the reception and distribution of supplies and equipment.

4. **Committed Dose Equivalent (CDE)** – The total dose equivalent (averaged over a particular tissue) deposited over a time period following the intake of a radionuclide.

5. **Committed Effective Dose Equivalent (CEDE)** - The effective dose equivalent resulting from radionuclides in the body over a time period (approximately 50 to 70 years).

6. **Contaminated Injured** - A person who is contaminated and otherwise physically injured, or contaminated and exposed to dangerous levels of radiation, or a person who is exposed to dangerous levels of radiation.

7. **Decontamination** - Procedures taken to remove and contain radiological contamination on persons or contamination present on supplies, instruments, equipment or vehicles. These procedures will usually involve showering by persons and washing or disposing of clothing and other contaminated items.

8. **Decontamination Survey** - The process by which persons and vehicles are monitored to determine the presence and/or level of contamination. Such surveys will be performed with the use of a Geiger-Mueller survey meter (Geiger Counter), or similar device.

9. **Derived Intervention Levels** (ingestion phase) - The concentration derived from the intervention level of dose at which introduction of protective measures should be considered.

10. **Dose Equivalent** - The product of the absorbed dose in Rad, a quality factor related to the biological effectiveness of the radiation involved and any other modifying factor.

11. **Dose Rate** - The amount of radiation which an individual can potentially receive per unit of time.

12. **Dosimeter** - An instrument worn by an individual to measure the total dose of radiation received over a specified period of time.

13. **Effective Dose Equivalent (EDE)** - The sum of the products of the dose equivalent to an organ or tissue, and the weighing factor applicable to each of the body organs or tissues that are irradiated.

14. **Emergency** - Any condition existing outside the bounds of nuclear operating sites owned or licensed by a Federal agency, and further, any condition existing within or outside of the jurisdictional confines of a facility licensed or registered by the Louisiana Department of Environmental Quality (LDEQ) and arising from the presence of byproduct material, source material, special nuclear material, or any other radioactive material or source of radiation which is endangering or could reasonably be expected to endanger the health and safety of the public or to contaminate the environment.

15. **Emergency Medical Assistance Program (EMAP)** - A program developed by the individual fixed nuclear facilities, in coordination with State and risk Parish government and supporting hospitals, which provides the basis for handling on-site medical emergencies, whether or not the injured/ill persons are radioactively contaminated or irradiated.

16. **Emergency Operations Center (EOC)** - A facility used by State or local government to direct operations in the event of an emergency.

17. **Emergency Operations Facility (EOF)** - A licensee facility near the plant for the management of overall emergency response, the coordination of radiological assessment and for the management of recovery operations. The EOF is designed to provide assistance in the decision making process for the protection of public health and safety and to control radiological monitoring teams and facilities on-site and off-site.

18. **Emergency Planning Zone (EPZ)** - A generic area defined about a nuclear facility to facilitate off-site emergency planning and develop a significant response base. It is defined for the plume and ingestion exposure pathways.

19. **Emergency Workers** - Persons acting in an official capacity to carry out functions and responsibilities inside the plume exposure pathway EPZ during an accident. As such, these individuals are under different criteria for protection than the general public.

20. **Evacuation Time Estimate (ETE)** – the estimated time needed to evacuate the public from affected areas of the plume exposure pathway EPZ.

21. **Field Monitoring Team (FMT)** - A team of personnel dispatched to the plume or ingestion exposure pathway EPZ at the time of an accident to perform radiological environmental sampling and surveys.

22. **Fixed Nuclear Facility Accident** (hereinafter called an "accident") - An accident at a fixed nuclear facility that can be categorized in one of the following four emergency classes:

    a. **Notification of Unusual Event** - Unusual events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs

    b. **Alert** - Events are in process or have occurred which involve an actual or potential substantial degradation, of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

    c. **Site Area Emergency** - Events are in process or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

    d. **General Emergency** - Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area.

23. **FLEX Strategy –** Based on the event and lessons learned at the Fukushima Daiichi Plant in Japan, after reaffirming a framework to respond to Fukushima Daiichi and creating a basis for action, the nuclear energy industry developed a diverse, flexible approach to implement the lessons

learned from Fukushima Daiichi. Its purpose is to prepare for the extended loss AC power (ELAP) and loss of ultimate heat sink (LUHS) on Beyond Design Basis External Events (BDBEE).

24. **Hostile Action** – An act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force.

25. **INFORM or equivalent software –** Electronic off-site communication system using secure internet ports to deliver emergency event notification. The notification forms are originated from the Control Rooms or Emergency Operation Facilities.

26. **Ingestion Exposure Pathway** - The process by which people are indirectly exposed to radiological contamination. The principal exposure from this pathway would be from ingestion of contaminated water or foods such as milk or fresh vegetables. The duration of principal exposures could range in length from hours to months. The EPZ for this pathway consists of an area of about 50 miles in radius around a fixed nuclear facility.

27. **Ionizing Radiation** – Short wavelength high frequency radiation that has the ability to energize and strip electrons from atoms or molecules creating an ion. Examples are alpha particles, beta particles, neutrons, and high frequency ultraviolet light, x-rays, and gamma rays.

28. **Licensee** - Holder of or applicant for a license to operate a fixed nuclear power facility.

29. **Local Government** - The legal governing body of any Parish, municipality or subdivision of the State. For the purposes of this Plan, the term "local" will refer to offices or agencies of Parish government and any organization functioning within the Parish and having an emergency response role.

30. **Main Evacuation Routes** - Those roadways identified in advance in State and risk Parish plans as the principal routes leading from the plume exposure pathway EPZ for use by vehicles in the event of an accident requiring evacuation.

31. **Monitor and Prepare** – A type of precautionary action intended to advise the public within the EPZ that a serious emergency at the nuclear power plant exists and that it should monitor the situation and prepare for the possibility of evacuation, SIP, or other protective actions. Further, if an evacuation is underway, officials should ask individuals who are not involved in the evacuation to remain off the roadways to allow those who are instructed to evacuate to do so.

32. **Mode of Discharge** - Any of several types of radioactive releases which principally consists of a discharge of radioactivity to the ground surface, surface water, the atmosphere or any combination thereof.

33. **National Response Framework (NRF)** - The *National Response Framework* is a guide to how the Nation conducts all-hazards response – from the smallest incident to the largest catastrophe. This key document establishes a comprehensive, national, all-hazards approach to domestic incident response. The *Framework* identifies the key response principles, roles and structures that organize national response. It describes how communities, States, the Federal Government and private-sector and nongovernmental partners apply these principles for a coordinated, effective national response. And, it describes special circumstances where the Federal Government exercises a larger role, including incidents where Federal interests are involved and catastrophic incidents where a State would require significant support. It allows first responders, decision-makers and supporting entities to provide a unified national response

34. **Operational** – An emergency facility (e.g., Joint Information Center, EOC, Laboratory) is considered operational when all key decision makers are at their duty stations and capable of performing all emergency function assigned to that facility.

35. **Persons with Disabilities and Access/Functional Needs** – Individuals within a community that may have additional needs before, during, and after an incident in one or more of the following functional areas: (1) maintaining independence, (2) communication, (3) transportation, (4) supervision, and (5) medical care. Individuals who are in need of additional response assistance may include those who have sensory, motor skill, or mental/emotional disabilities, who live in institutionalized settings, who are elderly, who are children, who are from diverse cultures, who have limited or no English-speaking proficiency, or who are transportation-disadvantaged.

36. **Pick-up Point(s)** – Pre-designated location(s) at which members of the general public without automobiles or other means of transportation will be provided (where applicable) with transportation out of the plume exposure pathway EPZ.

37. **Plume Exposure Pathway** - The process by which people are directly exposed to radiation. The principal exposures from this pathway would be whole body external exposure to gamma radiation from the plume and deposited materials, and inhalation exposure from the passing plume. The duration of principal exposures could range in length from hours to days. The EPZ for this pathway consists of an area of about 10 miles in radius around a fixed nuclear facility.

38. **Potassium Iodide (KI)** - A radioprotective drug which if administered properly, can saturate the thyroid with stable iodine and therefore reduce further uptake of radioactive iodine if radioiodines are inhaled. The

usefulness of this drug is limited to protecting the thyroid and affords no protection against external gamma whole body exposure.

39. **Precautionary Action** (ingestion phase) - The action taken, prior to confirmation of contamination, to avoid or reduce the potential for contamination of food and animal feed.

40. **Projected Dose** - The calculated or estimated dose to an individual or populace from exposure to the plume and/or deposited materials, over a period of time, in the absence of protective action.

41. **Protective Action** (plume phase) - A specific action which may be taken to minimize or eliminate a hazard to the health and safety of people within a risk area. Protective actions identified in this plan are access control, sheltering, evacuation and respiratory protection, thyroid protection, which may be implemented individually or in combination.

42. **Protective Action** (ingestion phase) - The action taken to limit the radiation dose from ingestion by avoiding or reducing the contamination in or on human food and animal feeds.

43. **Protective Action Areas (PAA) –** Terminology used by the State of Mississippi in lieu of "Protective Action Section." See "Protective Action Section (PAS)."

44. **Protective Action Decision (PAD)** – A chosen directive and implementation of that directive based upon Protective Action Recommendations to avoid or reduce exposure from radiation.

45. **Protective Action Guide (PAG)** - Projected radiological dose or dose commitment values to individuals in the general population which warrant taking protective action.

46. **Protective Action Recommendation (PAR)** – Advice given to the implementing agencies (e.g., local government) on emergency measures it should consider when determining action for the public to take to avoid or reduce exposure from radiation.

47. **Protective Action Section (PAS)** - An area within the plume exposure pathway EPZ where the implementation of protective action or actions may be deemed necessary at the time of an accident. See also "Protective Action Section (PAS)."

48. **Protective Response** - The implementation of a protective action or combination of protective actions by governmental agencies at the time of an accident to eliminate or reduce radiation exposure to the public.

49. **Radiation** - Any form of energy propagated as rays, waves, or streams of energetic particles that travel through space or a material medium. Ionizing radiation is of particular concern as it has the ability to damage human cells.

50. **Radiation Dose** - The quantity of radiation energy imparted to the body or any portion of the body without regard for the type of radiation.

51. **Radiological Monitoring Point** - A pre-designated location at which radiological data is gathered through automatic or manual environmental sampling.

52. **Radioprotective Drugs** - Compounds containing stable iodine in sufficient quantities to saturate the thyroid, thereby blocking partially or wholly the absorption, and increasing the elimination, of radioiodines by the human body.

53. **Rapidly Progressing Severe Accident** – General Emergency with rapid loss of containment integrity (emergency action levels indicate containment barrier loss) and either of the following: a. Greater than or equal to Containment High Range Area Radiation Monitor Potential Loss EAL Threshold (20% Clad Damage) OR b. A significant radiological release (greater than PAGs at boundary) in about an hour (Initiating Condition AG1, Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE declare).

54. **Reception Center** - A pre-designated site outside the plume exposure pathway EPZ at which evacuees will be registered, monitored for contamination, decontaminated if necessary, and directed to shelters or appropriate medical facilities as appropriate.

55. **Recovery** – The process of reducing radiation exposure rates and concentrations of radioactive material in the environment to acceptable levels for return by the general public for unconditional occupancy or use after the emergency phase of a radiation emergency.

56. **Reentry** – The temporary return of emergency workers or essential individuals into a restricted zone under controlled conditions.

57. **Relocation** – The removal or continued exclusion of people from contaminated areas to avoid chronic radiation exposure. Relocation may take place both inside and outside the 10-mile EPZ.

58. **Respiratory Protection** - Those actions taken at the time of an accident intended to minimize the inhalation of airborne contamination.

59. **Restricted Area** – An area in which evacuation has been completed and entry into this area is prohibited until the area is determined to be safe to return.

60. **Return** – The reoccupation of areas cleared for unrestricted residence or use.

61. **Risk Parish** - A Parish located partially or wholly within the plume exposure pathway EPZ of a fixed nuclear facility.

62. **Service Animals** – dogs that have been individually trained to do work or perform tasks for the benefit of an individual with a disability. Other animals, whether wild or domestic, do not qualify as service animals. Examples of such work or tasks include guiding people who are blind, alerting people who are deaf, pulling a wheel chair, alerting and protecting a person who is having a seizure, reminding a person with mental illness to take prescribed medications, calming a person with Post Traumatic Stress Disorder (PTSD) during an anxiety attack, or performing other duties. Dogs whose sole function is to provide comfort or emotional support do not qualify as service animals under the ADA. Service animals are permitted in all places that serve the public as long as the animal is not out of control. This access includes transportation with their owners/handlers during evacuations.

63. **Shelter** - A facility established outside the plume exposure pathway EPZ at the time of an accident for the purpose of providing food, shelter and medical care on a short or long-term basis for persons evacuating the risk area. It is also known as Congregate Care Facility.

64. **Sheltering** - Action taken by the public to protect against radiological exposure which includes remaining indoors, closing doors and windows and decreasing building ventilation during and following the passage of a radioactive plume. Also known as sheltering in place, shelter in place, or SIP.

65. **Strategic Alliance for FLEX Emergency Response (FLEX)** – In Support of the nuclear industry's response to the events that occurred at Fukushima Daiichi, the Strategic Alliance for FLEX Emergency Response (SAFER) was formed to support FLEX phase 3 Regional Response requirements. The SAFER team is an alliance between the Pooled Equipment Inventory Company (PEICo) and AREVA. The SAFER Alliance will operate regional response centers.

66. **Support Parish** - Generally, a parish outside the plume exposure pathway EPZ of a fixed nuclear facility that, through prior agreement, will provide resource support to a risk Parish in the event of an accident. East Baton Rouge Parish serves primarily as a support parish even though partially included within the River Bend Station plume exposure pathway EPZ.

67. **Total Effective Dose Equivalent (TEDE)** - The sum of the effective dose equivalent from external radiation while immersed in the plume and the Effective Dose Equivalent from four days exposure to deposition, and the Committed Effective Dose Equivalent from inhalation of the material in the plume.

68. **Traffic Control Point** – Pre-designated locations established on a main evacuation route to be manned by emergency workers. These locations will be manned for the purpose of controlling traffic flow during an accident requiring evacuation of all or a portion of the plume exposure pathway EPZ.

69. **Turn Back Value** – Exposure values as read on a dosimeter at which emergency workers are required to perform specific actions.

    a. Initial turn back value – At 200 mR emergency workers must contact their team leader for further instructions.

    b. Second turn back value – At 1000 mR or 1 R emergency workers must exit the exposure area and then contact their team leader for further instructions.

B. Purpose

1. To establish policies and procedures to govern state and local response for the protection of public health, safety and welfare in the event of an accident at any fixed nuclear facility affecting Louisiana.
2. To provide a framework for the integration and coordination of federal, state, local, licensee, adjoining state(s), and private planning efforts for response to a fixed nuclear facility accident.
3. To establish requirements for preparedness programs that will enhance capability for effective response to a fixed nuclear facility accident to include training, exercises and drills, and public education programs.

C. Scope

This plan constitutes the basis for a comprehensive program of preparedness for response to and recovery from fixed nuclear facility accidents. It details authorities, responsibilities and concepts that govern the coordination of federal, state, local and private organizations and resources for radiological emergency preparedness and response. In order for the concepts of the plan to be fully and effectively implemented, the development of detailed implementing procedures for organizations with key response roles is necessary. Such implementing procedures are in support of the plan and are not within the scope of the plan.

D. Objectives

1. To identify authorities and assign responsibilities for offsite response to fixed nuclear facility accidents.
2. To provide a basis for the development of detailed implementing procedures by state and local government response organizations.
3. To provide a basis for the development of a coordinated system of public alert/notification and dissemination of public information at the time of an emergency.
4. To provide for the direction and control of state emergency operations in the event of an accident.
5. To provide a basis for accident assessment and the selection of the appropriate protective measures to be taken in the event of an accident.

6. To provide for the assignment of appropriate protective measures to avoid or reduce the contamination of agricultural and dairy products, foodstuffs and water supplies within the ingestion exposure pathway EPZ of a facility, and to control the ingestion of such products if contaminated.
7. To establish guidelines for conducting necessary exercises and drills.
8. To establish requirements and guidelines for a comprehensive public education program.
9. To make provisions for radiological emergency response training of state, local and volunteer personnel who are assigned response roles to carry out in the event of an accident.

SECTION III

Situation and Assumptions

A. Situation

1. The fixed nuclear facility sites in Louisiana are:

   a. Waterford 3 Steam Electric Station, St. Charles Parish, Louisiana

   b. River Bend Station, West Feliciana Parish, Louisiana

2. The fixed nuclear facility operating outside the State of Louisiana having plume exposure pathway and ingestion exposure pathway EPZs falling inside Louisiana is:

   a. Grand Gulf Nuclear Station, Claiborne County, Mississippi

3. All accidents occurring at fixed nuclear facilities will be classified according to the emergency classification system established in Appendix 1 of NUREG- 0654/FEMA REP-1, Rev. 1. These emergency classes are: Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency.

4. For planning purposes, the plume exposure pathway EPZ for each nuclear facility covered in this Plan has been divided into protective action sections (areas) of approximately 2, 5, and 10 miles distance from the facility. This configuration has been adopted in order to allow State and local decision makers' maximum flexibility in recommending protective actions to the public in response to an accident.

5. In the event of a release of radioactive material, the public could be affected via, through or as a result of:

   a. Exposure to airborne radioactivity in the passing plume.

   b. Exposure to radioactive material deposited on the ground.

   c. Inhalation of radioactive material from the passing plume.

   d. Ingestion of radioactively contaminated food products and water.

6. The off-site radiological consequences of an accident to the public are dependent upon many factors. Some factors which affect accident impact are: the type of accident, the magnitude and height of a release, duration and mode of discharge, population distribution, weather conditions, topography, resources available and prior planning.

7. Elected officials at each level of government are responsible for the health, safety and well being of individuals and the protection of the environment within their jurisdictions.

8. Protective actions will be initiated by the Chief Executive Officer of an affected parish in coordination with the State.

9. The State will cooperate with and provide support to local governmental units in carrying out protective actions. Local government(s) will report all resource requirements to the State.

B. Assumptions

1. Protective actions may be recommended at either the Site Area Emergency or General Emergency classes.

2. An accident may require protective actions within one or both of the plume exposure pathway and ingestion exposure pathway EPZs.

3. An accident may require that the population within the affected plume exposure pathway EPZ take protective actions which may include sheltering, utilizing devices for respiratory protection, evacuating, monitor and prepare, or any combination of the above mentioned activities.

4. An accident may require that measures be taken to protect livestock and crops, food products and processing facilities as well as water supplies within the affected ingestion exposure pathway EPZ.

5. Provisions of Stafford Disaster Relief and Emergency Assistance Act, P. L. 101-707 will apply if the incident should result in a Presidential declaration of emergency or disaster.

6. The principal means of evacuation for the general population in an emergency will be the private automobile augmented by bus transportation where necessary.

7. FLEX Strategy will be implemented for Beyond Design Bases External Events (seismic impact, external flooding, severe storms with high winds such as hurricanes and tornados, extreme winter condition such as snow, ice, extreme cold temperatures, extreme high temperatures).

SECTION IV

Concept of Operations

A. In the event of an accident at a fixed nuclear facility affecting Louisiana, initial notification will be made by the licensee to Louisiana Department of Environmental Quality (LDEQ), Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), and all risk Parishes simultaneously. As part of its notification, the licensee will advise these agencies of the emergency class.

B. Subsequent notification of changes in the emergency class or emergency conditions will be made by the licensee to LDEQ, GOHSEP and all risk Parishes. Continuing communications will be maintained between the licensee and LDEQ for technical assessment. Protective action recommendations will be issued by the licensee directly to the Parishes and State agencies concurrently, unless otherwise agreed upon between the licensee and LDEQ; however, actual protective actions implemented are the responsibility of the individual Parish governments.

C. GOHSEP will provide notification to support Parishes as well as those Parishes and adjacent States within the ingestion exposure pathway EPZ of a fixed nuclear facility.

D. LDEQ will coordinate the technical response of State, Federal and private resources. LDEQ will provide notification to agencies designated to support technical response as determined by the emergency class or other assessment. LDEQ will maintain the necessary coordination with the technical response organizations of other States sharing an EPZ with Louisiana.

E. GOHSEP will coordinate the activities of State, Federal and private agencies supporting Parish protective response. GOHSEP will provide notification to agencies designated to support protective response as determined by the emergency class or other assessment.

F. The State Emergency Operations Center (EOC) at 7667 Independence Boulevard, Baton Rouge, will be activated by GOHSEP at the time of an accident, as determined by the emergency class or other assessment. This EOC will be staffed by State response agencies in accordance with the responsibilities established in this Plan and in supporting implementing procedures. GOHSEP will maintain communications with affected risk and support Parishes and adjacent States for coordination of requested assistance.

The State EOC's readiness is maintained by the Operations Section Chief. Backup power is provided by two 500 kW generators. Sign in and selective

key card access allows entrance into various areas of the EOC. A layout of the EOC is located in the Governor's Office of Homeland Security Emergency Operations Center Standard Operating Procedures, Appendix 2. The essential equipment at the EOC is documented in the State EOC Major Equipment List, which is maintained by GOHSEP. Should the primary EOC become inoperative, isolated, and/or unusable, the alternate State EOC at Building 1338, Camp Beauregard, Pineville will be activated.

G. At the time of an accident, LDEQ will activate its headquarters (HQ) as determined by the emergency class or other assessment. Upon declaration of an "Alert" or a higher emergency classification, LDEQ will typically deploy an emergency response liaison team consisting of Senior EOF Liaison (SEL), Senior EOF Liaison Support (SELS), Accident Assessment Coordinator (AAC), Dose Assessment Coordinator (DAC), Field Team Coordinator (FTC) and Field Team Coordinator Support (FTCS) to the utility's Emergency Operations Facility (EOF), dispatch a Public Information Officer (PIO) to the utility Joint Information Center (JIC), deploy Field Monitoring Teams (FMTs) to staging areas, and dispatch the LDEQ Secretary or designee and a technical liaison officer to the State EOC.

1. Note: Actual time of deployment of LDEQ responders will occur at the discretion of LDEQ HQ personnel.

2. While LDEQ personnel are in transit to various staging areas or "on-scene" operating locations, coordination of all LDEQ response activities is done at LDEQ HQ where mobile communications equipment can be used to maintain contact. Once the LDEQ EOF response team arrives at the Emergency Operations Facility (EOF), coordination of protective action recommendations will take place face-to-face between the senior LDEQ representative and the utility's senior representative. LDEQ headquarters then assumes a support role and becomes a backup headquarters for the duration of the emergency condition.

3. Decision making authority for protective action recommendations rests with the LDEQ Secretary or designee during emergency conditions.

4. Continuous communications will be maintained between LDEQ headquarters, emergency response teams, the facility, and the State EOC for the duration of the emergency.

H. LDEQ's FMTs will conduct monitoring and sampling activities at various sites in the plume exposure pathway EPZ at the time of an accident. Field monitoring data will be transmitted to the LDEQ emergency response liaison team at the EOF or to the LDEQ HQ team if the EOF is not activated. The EOF liaison team (or the LDEQ HQ team if the EOF is not

activated) will conduct accident assessment using FMT data and facility information.

I. Protective action recommendations (PAR) will be developed by the LDEQ technical assessment team based on accident assessment. These recommendations will be forwarded to the LDEQ Secretary or designee for approval.

J. Generally, the LDEQ Secretary or designee will evaluate technical assessment and protective action recommendations in coordination with the Director or designee of the GOHSEP, and make a decision on the provision of recommendations to the Parishes. This process will generally take place at the State Emergency Operations Center (State EOC).

K. Upon the decision of the LDEQ Secretary or designee on the PARs, LDEQ will coordinate with GOHSEP to assure that these PARs are disseminated to the affected Parishes, and other jurisdictions, if and as appropriate, without undue delay.

Note: In the event, the State EOC is not activated or operational, or coordination cannot be conducted with the Director or designee of GOHSEP – upon the decision of the LDEQ Secretary or designee on the protective action recommendations (PARs), LDEQ Secretary or designee will exercise every effort to disseminate PARs to the affected Parishes and other jurisdictions, if and as appropriate, without undue delay.

L. The State may request Federal support to State and local response for an accident. Upon request, the US Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA) will coordinate all non-technical Federal support and the US Nuclear Regulatory Commission (NRC) will coordinate all technical Federal support, in accordance with NRF, Nuclear/Radiological Incident Annex, to State and local assessment and response activities.

M. State-level recommendations for the relaxation of protective actions and the initiation of recovery activities will be based upon plant conditions, ambient levels of radioactivity compared to Protective Action Guides and other relevant factors. LDEQ monitoring, sampling, and dose assessment activities will continue until no further threat to public health exists. LDEQ will communicate, in coordination with GOHSEP, a recovery recommendation to all risk Parishes following the decision of the LDEQ Secretary or designee. Support Parishes and ingestion pathway EPZ Parishes and State agencies will be advised by GOHSEP of the recovery recommendation.

N. GOHSEP will coordinate recovery effort at the State level.

O. Entergy has identified specific staging area(s) (up to 35 miles away) that will receive, stage, and route equipment to a nuclear power station. In

preparation of moving equipment to a nuclear power station, Entergy will coordinate with the State of Louisiana for the purpose of:

1. Law enforcement escort at the state borders, to the designated offsite area(s), and the site(s);
2. Security, if necessary, at the designated staging area(s)
3. Assistance from State Agencies;
4. If the site is physically isolated, among other resources, the use of medium lift helicopter may be requested from Air National Guard assets;
5. Distribution of KI and dosimetry to emergency workers at the designated staging area(s); and
6. Information and access for trucks that may include debris removal, snow removal, ice mitigation, or any other activities that are designed to provide full access to roads.

SECTION V

Direction and Control

A. Governor of Louisiana

1. The Governor is responsible for the coordinated delivery of all emergency services, public and private, in a major emergency.
2. For the purposes of response to an accident at a fixed nuclear facility, the Governor or designee will direct State-level emergency operations through the regularly constituted governmental structure.
3. The Governor is responsible for declaring the state of emergency if necessary.

B. Louisiana Department of Environmental Quality (LDEQ)

1. LDEQ has jurisdiction over matters affecting the environment including the regulation and control of radiation.
2. The LDEQ Secretary or designee of the Louisiana Department of Environmental Quality is authorized to direct the development and implementation of emergency response plans for fixed nuclear facility accidents.
3. The LDEQ Secretary or designee is responsible, as Emergency Planning Coordinator, for the development and updating of emergency plans and coordination of these plans with other response organizations.
4. The LDEQ Secretary or designee is responsible for assuring continuity of resources to support a protracted, continuous operation.
5. The LDEQ Secretary or designee is authorized to request technical assistance for a fixed nuclear facility accident from NRC, DOE, EPA or other Federal agencies.
6. LDEQ is charged with coordinating the technical response to an emergency involving the possible or actual release of radioactive materials. In this role, LDEQ is the lead State agency for the development of State-level radiological emergency response planning, for coordinating the State's technical response to a fixed nuclear facility accident and for the development of State-level recommendations for protective actions to protect public welfare and safety.

C. Governor’s Office of Homeland Security & Emergency Preparedness (GOHSEP)

1. GOHSEP has overall authority for the coordination of general State-level emergency plans and programs.

2. GOHSEP Director or Designee coordinates all phases of disaster operations including the emergency response of State agencies, the Federal Emergency Management Agency, and other States when appropriate.

3. GOHSEP is headed by a Director who is appointed by and reports directly to the Governor during an emergency. The GOHSEP Director serves as the Governor's authorized representative during emergencies.

D. Other State Agencies

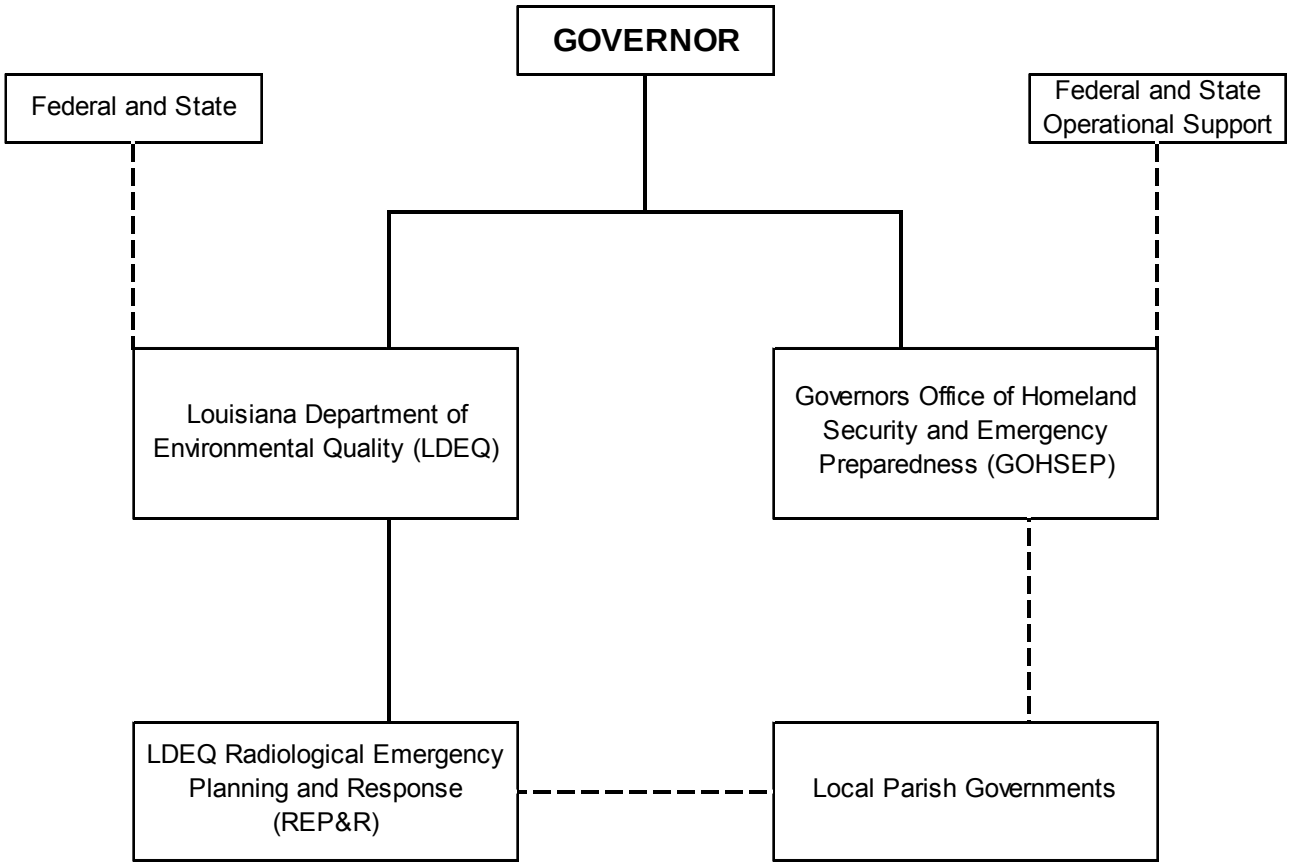
1. Several designated State departments are tasked with specific emergency roles in support of the State's technical evaluation of and response to an accident and in support of Parish protective response operations.

2. LDEQ will coordinate the activities of those State personnel tasked to support the technical response.

3. GOHSEP will coordinate the activities of those State departments tasked to provide State support to Parish protective response operations during an accident.

FIGURE 1 TO SECTION V

PRIMARY STATE DIRECTION AND CONTROL ELEMENTS FOR RADIOLOGICAL EMERGENCIES



Direct Relationship

Coordinating Relationship

SECTION VI

Responsibilities of Head of Departments of State Government

A. Common Responsibilities

1. Develop detailed implementing procedures for the implementation of assigned support responsibilities. Implementing procedures should briefly establish the department's concept of operations and its relationship to the total effort, as well as a detailed set of procedures necessary for implementation of assigned responsibilities.
2. Coordinate implementing procedures with other State and local agencies and organizations, as necessary, to ensure effective implementation at the time of an accident.
3. Designate a primary and an alternate individual, by title, who will be in charge of emergency response for the department to ensure continuity of resources in support of 24 hour operations.
4. Establish a department emergency organization to include the assignment of key department personnel to emergency response, emergency management and department liaison activities. Adequate personnel assignments should be made to sustain continuous operations for a protracted period.
5. Maintain at least two shifts (12 hour shift) of key staff during an emergency. During the shift change, outgoing staff will brief the incoming staff of the status of the emergency and response activities occurring.
6. Develop internal procedures to alert, notify and mobilize department personnel assigned emergency functions.
7. Provide for timely activation and staffing of facilities and centers described herein.
8. Develop and maintain rosters of critical department personnel and resource inventories of emergency equipment and supplies.
9. Participate in radiological emergency response training, exercises and drills.
10. Provide a representative to the State EOC, as necessary, during an accident.

B. Individual Department Responsibilities

1. **Louisiana Department of Agriculture and Forestry**

   a. Serve as liaison between the State and the USDA, during an accident.

b. In coordination with the USDA, State and County Emergency Boards, assist in the development and provision of emergency information to the agricultural community for the protection and/or disposition of livestock and crops during an accident.

c. Provide land-use information (maps, etc.) and assist LDEQ and GOHSEP in the identification (i.e., type and location) of agricultural products within affected areas of the ingestion exposure pathway EPZ.

d. Provide for the use of the USDA Surplus Commodities Program food stock for mass feeding of evacuees at schools designated as shelters in the event of an accident.

e. Assist LDEQ in the collection of soil, crop, and other agricultural products, as necessary, and transport such samples, as needed, to LDEQ's Contract Laboratory or other laboratories/facilities for analysis.

f. When requested, coordinate with the Louisiana Office of Public Health, USDA, FDA, and LDEQ, to develop a system of identifying, storing and disposing of contaminated agriculture products.

g. In the event that the control or condemnation of agricultural products is required, the Department of Health and Hospitals, Office of Public Health will be responsible for providing advice and guidance on the diversion of radiologically contaminated food, crops, and milk originating in the ingestion pathway EPZ.

h. Provide for emergency motor fuel allocations within the risk area to support an evacuation during an accident.

NOTE: This function is not authorized unless the Governor declares a state of emergency.

2. **Louisiana Department of Commerce**

Serve as State liaison to commercial and industrial establishments to include assistance in notification of such establishments during an accident, as needed.

3. **Louisiana Department of Education**

Serve as the State liaison to local School Boards during an accident.

4. **Louisiana Department of Environmental Quality**

a. Serve as the lead State agency for the development and implementation of the Plan, and coordinate the development of detailed implementing procedures necessary to support the State plan.

b. Coordinate radiological emergency response planning with all fixed nuclear facilities affecting the State of Louisiana, and assure the establishment of adequate communications and coordination with those facilities for emergency response.

c. Provide assistance to Parish governments in the development of technical aspects of detailed implementing procedures.

d. Serve as the lead State agency for the technical response to an accident and coordinate the activities of State, Federal, and private technical resources employed in response to an accident.

e. Conduct accident assessment to include off-site field monitoring, environmental sampling analyses, evaluation of radiological information from the facility, and periodic estimation of the total population exposure and cumulative population dose.

f. Based on accident assessment, make recommendations on appropriate protective response aimed at protecting public health and safety.

g. Develop and issue guidance on radiological exposure control for emergency workers to include the establishment of protective action recommendations, criteria for decontamination, the use of dosimeters, the maintenance of adequate dose records, and the management of emergency worker exposures.

h. Provide technical guidance and assistance to State agencies and Parish governments on radiological monitoring of personnel, vehicles and equipment and the decontamination procedures.

i. Plan for and establish a radiological monitoring system for the placement of permanent remote monitoring devices as well as for use by mobile monitoring teams during an accident.

j. Provide a Public Information Officer (PIO) to the Joint Information Center (JIC) sponsored by each power plant for the provision of emergency public information to the news media concerning the State's response to an incident at a nuclear power plant.

k. Maintain a personnel duty system during non-duty hours to ensure that responsible persons are available for immediate evaluation of an accident on a 24-hour basis.

l. Establish criteria for the relaxation of protective response to include implementation of reentry operations.

m. In conjunction with the facility and appropriate state agencies, develop a public education program and materials designed to inform the public of the nature of radiation, the hazards involved and the means for protection from the hazards.

n. In coordination with GOHSEP, develop and conduct training programs, drills and exercises to ensure effective implementation of the plan and supporting procedures.

o. Participate in annual media briefing in conjunction with each facility and the State and Parish Offices of Emergency Preparedness to acquaint media representatives with emergency plans, media centers and points of contact for each response organization.

p. Provide for the publication, distribution, review, revision and update of the Plan.

q. Coordinate with the Department of Agriculture and Forestry, USDA, and Department of Health and Hospitals to provide assistance and guidance for identifying, storing and disposing of contaminated agricultural products.

r. Provide an LDEQ decision maker to the State EOC.

s. Provide recommendation on the need to issue KI to emergency workers and institutionalized persons to the State Health Officer.

t. Maintain implementing procedure OP-2 Notification and Headquarters Activation, which details notification and mobilization of emergency personnel during both normal working hours and off-hours.

u. Provide timely activation and staffing of facilities described in the plan. For further details, see implementing procedures OP-2 Notification and Headquarters Activation, OP-10 Senior EOF Liaison, and OP-19 Headquarters Operations Officer (HOO).

v. Maintain current mapping software including aerial imagery updated minimally every 5 years; street maps including waterways updated every six months; and land use maps updated by a frequency determined by the USGS.

5. **Louisiana Department of Health and Hospitals**

a. Provide the State Health Officer to State EOC to give recommendation to issue Potassium Iodide (KI) to emergency workers.

b. Support the relocation of hospital patients from hospitals within the risk areas to identified support hospitals, during an accident.

c. Assist in the provision of mass emergency medical transportation resources to be used for the relocation of hospital patients during an accident.

d. Support risk health care facilities and risk Parishes with identification and coordination of medical resources.

e. Office of Public Health

i. In coordination with the FDA, provide for the collection of water, milk and sewage samples and food samples from food processing plants, and for the transportation of such samples for laboratory analysis, during an accident.

ii. In coordination with the Department of Agriculture and Forestry, USDA, and LDEQ, when requested, will provide advice and guidance for identifying, storing and disposing of contaminated agriculture products.

iii. In coordination with the FDA, provide for the diversion of radiologically contaminated food, crops and milk during an accident.

iv. Provide for the inspection of shelter facilities to ensure that adequate sanitary, water and food service is available for the number of people assigned.

v. Provide for the expedient acquisition of radioprotective drugs and for their use by emergency workers, as necessary and practical, during an accident.

vi. Provide for the notification to downstream water purification facilities of an accident and advice on the appropriate protective action.

6. **Louisiana Department of Public Safety and Corrections**

a. Department of Corrections Services

i. Open and staff the Corrections Services Incident Management Center (IMC).

ii. Maintain contact with Parishes and Local Facilities.

iii. In coordination with GOHSEP, provide assistance to Parish governments, as necessary, in the transportation, security, and/or housing of offenders that are evacuated or relocated due to a radiological event.

iv. In coordination with the Department of Health and Hospitals, provide advice and guidance for the proper disposition of agricultural products originating at Corrections facilities that have been contaminated during an accident.

v. Assist in traffic control operations for the risk and support areas during an evacuation, if requested

vi. Provide communications support, as needed.

vii. In coordination with the Parish Sheriff's Offices, assist in providing law enforcement support to the risk and support areas after an evacuation.

viii. Assist in providing security at shelters and other locations as needed.

b. Louisiana State Police

i. In coordination with the Parish Sheriff's Offices, assist in traffic control operations for the risk and support areas during an evacuation, particularly on State or Federal highways.

ii. In coordination with the Parish Sheriff's Offices, assist in establishing access control to the designated risk area during an accident.

iii. In coordination with the Parish Sheriff's Offices, assist in providing law enforcement support to the risk and support areas after an evacuation.

iv. Provide communications support to field operations of responding State agencies during an accident, as needed.

v. In coordination with the Department of Transportation and Development, conduct ground and air surveillance during an evacuation to identify traffic restrictions or other impediments to travel and to assist in expediting movement of people out of the risk area.

vi. Provide ground and air transportation on a limited basis for priority missions of mobile monitoring or other key response personnel.

vii. Provide personnel from the Hazardous Materials Section, as requested, to support LDEQ FMT operations.

7. **Louisiana Department of Children and Family Services**

a. Provide assistance to the American Red Cross at reception centers or local shelter facilities in the registration, placement, feeding, clothing and general care of people evacuated from the risk area.

b. Louisiana Department of Children and Family Services will provide resource support to specific incident missions as directed through mission tracking protocols administered by GOHSEP. For more information, the roles and duties are outlined in the LPRRP Attachments and the Louisiana Emergency Operations Plan.

8. **Louisiana Department of Transportation and Development**

a. When requested by parishes, through GOHSEP, provide transportation resources for evacuation of people who do not have access to private vehicles.

b. Provide for highway clearance and maintenance during an evacuation to include removal of wrecked or stalled vehicles, the expedient establishment of optimum traffic flow on highways under construction and the relief from other impediments or restrictions to traffic flow.

c. In coordination with the Office of State Police, conduct traffic surveillance during an evacuation to identify impediments to travel and, if necessary, modify traffic flow through rerouting and/or road closures, and designate alternate evacuation routes as contingencies dictate.

d. In coordination with the Office of State Police, assist in access control to include the establishment of road barricades and other traffic control devices, during an accident.

e. Provide a DOTD representative to the State EOC.

9. **Louisiana Department of Wildlife and Fisheries, Enforcement Division**

a. <u>Enforcement Division</u>

i. Provide assistance in warning and evacuation of wilderness and wetland areas during an accident.

ii. Enforce closures of hunting and fishing area.

iii. Provide transportation support, as necessary, during an accident.

b. <u>Wildlife Division</u>

i. In coordination with LDEQ, conduct terrestrial and aquatic sampling and transport such samples for laboratory analyses, during an accident.

ii. Assist in submission of samples to appropriate laboratories.

iii. In coordination with LDEQ, biological staff may assist with sample analysis.

10. **Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP)**

a. Coordinate the non-technical response to an accident.

b. Provide assistance to Parish governments in the development of implementing procedures for protective response.

c. Coordinate the provision of State resources to support the protective response operations of Parish governments during an accident.

d. Request and coordinate the provision of non-technical Federal resource support for protective response to an accident.

e. Provide the list of facilities that may be made available to federal response personnel.

f. Coordinate the establishment of operational communications systems to provide an interface between State and Parish governments and operational resources.

g. Provide for direction and control of emergency operations through implementation of the Governor's emergency declarations.

h. Provide a Public Information Officer (PIO) to the Joint Information Center (JIC) for the provision of non-technical emergency public information to the news media concerning the State's response to an incident at a nuclear power plant.

i. In coordination with LDEQ, develop and conduct training programs, drills and exercises to insure effective implementation of the plan and supporting procedures.

j. Provide for 24-hour coverage of the emergency hotlines located at GOHSEP.

k. Provide, during off-hours, emergency information to LDEQ and other state agencies, as needed.

11. **Louisiana State National Guard**

a. In coordination with the Office of State Police, provide manpower and vehicles to support traffic control, access control, and security operations during an evacuation.

b. In coordination with the GOHSEP, provide manpower and vehicles to support transportation of people and supplies during an evacuation.

c. In coordination with the GOHSEP, provide communications support to field operations of State agencies and Parish personnel during an evacuation.

d. Provide support in highway clearance and maintenance and emergency fuel distribution during an evacuation.

12. **Louisiana Workforce Commission**

a. In coordination with the Department of Commerce and Industry, analyze the impact of an accident on employment.

b. Provide for the administration of the Disaster Unemployment Assistance Program for an accident which has contributed to significant short or long term unemployment.

c. Assist with mass feeding of evacuees.

13. **Office of the Governor**

a. The Governor's Press Secretary is the official state spokesperson for release of statewide emergency public information. The Governor's Press Secretary is responsible for:

b. Establishing contact with designated State agency public information officers for preparation of coordinated information releases to news media.

c. Coordinating with the various spokespersons, including utility and Parish representatives, when emergency public information is released to news media.

d. Providing personnel to the designated Joint Information Center as appropriate for the situation.

14. **Office of State Parks**

a. In coordination with the Parish Office of Emergency Preparedness, provide for the notification and evacuation of people using park areas under the jurisdiction of the Department during an accident.

i. In coordination with the Parish Office of Emergency Preparedness, provide for the use of park areas under the jurisdiction of the Department for sheltering of evacuees, as appropriate and necessary, during an accident.

FIGURE 1 TO SECTION VI

State Agency Responsibilities

PRIMARY STATE DIRECTION AND CONTROL ELEMENTS FOR RADIOLOGICAL EMERGENCIES P = Primary S = Secondary/Support	Agriculture & Forestry	Commerce	Education	Enviromental Quality	Health & Hospitals	Public Safety & Corrections	Children and Family Services	Transportation & Development	Wildlife & Fisheries	GOHSEP	National Guard	Workforce Commission	Office of the Governor	State Parks	State Fire Marshall	Fixed Nuclear Facilities	Parish Governments	American Red Cross
Access Control								S			S						P	
Accident Assessment				P												S		
Accident Classification																P		
Communications				S		S			S	P	S					S	S	
Direction & Control				S						S							P	
Emergency Medical Services					S												P	
Field Sampling	S			P	S	S			S							S		
Fire & Rescue	S														S		P	
Food & Water Purity	S			S	P	S											S	
Fuel Distribution	P							S			S							
Highway Maintenance						S		P			S						S	
Law Enforcement						S											P	
Notification				S						S						P	S	
Protective Action Decision				S						S							P	
Public Alert/Notification		S			S				S	S				S			P	
Public Health					P												S	
Public Information	S			S		S				P			S			S	S	
Radiological Exposure Control				P													S	
Security						S					S						P	
Shelter & Care	S		S		S	S	P					P		S				S
Social Services							P					P					S	
Traffic Control						S		S			S						P	
Transportation					S	S		S	S		S						P	

SECTION VII

Support and Resources

A. Federal

1. The Federal Emergency Management Agency (FEMA) is the lead Federal agency for the coordination of non-technical Federal support to State/local agencies in implementing protective measures. Support provided by Federal agencies through FEMA is primarily logistical support and may include telecommunications, transportation, housing and all other types of assistance not classified as technical. The Federal government maintains an in-depth capability to assist State and local governments through the National Response Framework, NRF, Nuclear/Radiological Incident Annex.

2. The U.S. Nuclear Regulatory Commission (NRC) is the lead Federal agency for the coordination of technical Federal support to State/local agencies in the technical assessment of an accident. Support provided by Federal agencies, primarily through DOE, may include radiological condition assessment off-site, radiological monitoring, evaluation, assessment and reporting activities. Support provided primarily by DOE may also provide laboratory support as required and requested during an accident. Details of Federal technical support are identified in the National Response Framework, NRF, Nuclear/Radiological Incident Annex.

   a. Members of the Radiological Assistance Program (RAP) from DOE in Oak Ridge, Tennessee are expected to arrive within 4 to 6 hours following notification.

   b. A FRMAC Advance Party (Consequence Management Response Team (CMRT I)) should arrive within 12 hours following the order to deploy.

3. Technical support augmentation will be requested by LDEQ through NRC or DOE. Operational support will be requested by GOHSEP through FEMA.

4. GOHSEP provides the list that includes locations and descriptions of facilities that may be made available to Federal response personnel.

B. State and Local

1. The Louisiana State University/Department of Physics/Nuclear Science Laboratory may provide laboratory and sample analysis support during accident assessment operations and for post-accident analysis.

2. The Southern Mutual Radiation Assistance Plan (SMRAP) provides for manpower support to field sampling and laboratory analysis activities for an accident. Participating States include Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia each State providing its own resources as required and requested to support response to an accident occurring in a participatory State.

3. Various local community services and other public and private resources are available for support to local response to an accident. These resources include hospitals, nursing homes, emergency medical services, transportation companies, schools and others. The employment of such resources will be coordinated at the Parish level as detailed in the Attachments to this Plan and related agreements.

SECTION VIII

Administration

A. Development

1. As the lead State agency for the development of this Plan, LDEQ is responsible for the formalization and reproduction of the Plan.

2. LDEQ is also responsible for coordinating the development of supporting maps, public information brochures, pamphlets and related documents which generally support the Plan.

B. Review and Revision

1. The LDEQ REP&R Staff will update the Plan and agreements as necessary and review and certify the Plan to be current on an annual basis.

2. Plan revision will be based on the annual review as well as the identification of changes and deficiencies resulting from drills, exercises, response to real events and inter-agency coordination.

3. Maps surrounding nuclear power plants including ingestion pathway information will be annually reviewed and revised if any changes are made.

C. Distribution (See Tab 1)

1. LDEQ REP&R Staff will forward the Plan to all affected organizations and appropriate individuals responsible for implementation of the Plan.

2. While distribution of the Plan will be controlled, additional copies may be made available upon specific request and with appropriate justification.

3. Sufficient copies of the Plan will be distributed to the State library system to provide members of the general public ample access to the Plan.

4. A distribution list of controlled copy holders of the Plan will be maintained by LDEQ so that their copies can be kept current.

5. Upon formal completion of the Plan update, LDEQ will forward approved changes to controlled copy holders of the Plan. When changes are issued, controlled copy holders of the Plan will be forwarded dated inserts to bring their copies to current status. Revised pages will be marked to note where changes have

occurred. A return acknowledgement sheet will be forwarded with the change, to be returned to LDEQ, so the current status of each copy can be confirmed.

6. If no changes are deemed necessary, based on the annual review, LDEQ will forward a statement to controlled copy holders of the Plan certifying it to be current.

7. Law Enforcement Sensitive information in the Hostile Action Plan (HAB) sections of the Plan may be redacted or distributed to a limited number of organizations on a need-to-know basis.

D. Implementing Procedures (See Tab 2)

1. State or local government organizations, that develop procedures for the implementation of the Plan, are responsible for the formalization, distribution and update of those procedures.

2. GOHSEP will have the primary responsibility for coordinating the extent and content of the various implementing procedures associated with appropriate functions of the state EOC during an emergency.

3. All agencies identified in the Plan will maintain copies of their procedures that are necessary in order to implement the Plan, and will place them on file with the current Plan.

4. Each responsible organization will update its procedures and agreements, as needed, and review and certify it to be current on an annual basis. The update shall take into account changes and deficiencies identified by exercises, drills, response to real events and inter-agency coordination.

5. LDEQ's REPR Staff will update telephone numbers in its emergency implementing procedures at least quarterly.

E. Supporting Documents (See Tab 3)

LDEQ will maintain copies of documents which support the Plan and will place them on file with the current Plan.

TAB 1 to SECTION VIII

Plan Distribution List

Adams County Emergency Management Agency
American Red Cross, Capital Area Chapter
American Red Cross, Southeast Louisiana Chapter
Amite County Emergency Management Agency
Argonne National Laboratory
Arkansas Department of Health & Human Services
Ascension Parish Homeland Security & Emergency Preparedness
Assumption Parish Homeland Security & Emergency Preparedness
Avoyelles Parish Homeland Security & Emergency Preparedness
Catahoula Parish Homeland Security & Emergency Preparedness
Claiborne County Emergency Management Agency
Concordia Parish Homeland Security & Emergency Preparedness
Copiah County Emergency Management Agency
East Baton Rouge Parish Library, Bluebonnet Branch
East Baton Rouge Parish Library, Central Branch
East Baton Rouge Parish Library, Main Library
East Baton Rouge Parish Library, Zachary Branch
East Baton Rouge Parish Mayor's Office of Homeland Security & Emergency Preparedness
East Carroll Parish Homeland Security & Emergency Preparedness
East Feliciana Parish Homeland Security & Emergency Preparedness
Federal Emergency Management Agency, Headquarters
Federal Bureau of Investigation, New Orleans Division
Federal Emergency Management Agency, Region IV
Federal Emergency Management Agency, Region VI
Franklin County Emergency Management Agency
Franklin Parish Homeland Security & Emergency Preparedness
Governor’s Office of Homeland Security & Emergency Preparedness
Grand Gulf Nuclear Station
Hinds County Emergency Management Agency
Iberia Parish Homeland Security & Emergency Preparedness
Iberville Parish Homeland Security & Emergency Preparedness
Issaquena County Emergency Management Agency
Jefferson County Emergency Management Agency
Jefferson Parish Homeland Security & Emergency Preparedness
LA Department of Agriculture & Forestry

LA Department of Children & Family Services
LA Department of Environmental Quality
LA Department of Health & Hospitals
LA Department of Natural Resources
LA Department of Public Safety & Corrections, Corrections Services
LA Department of Public Safety & Corrections, Office of State Police, Hazmat Unit
Louisiana State Police, Crisis Response Unit
LA Department of Public Safety & Corrections, Office of State Police, Troop A
LA Department of Public Safety & Corrections, Office of State Police, Troop B
LA Department of Public Safety & Corrections, Office of State Police, Troop C
LA Department of Public Safety & Corrections, Office of State Police, Troop E
LA Department of Public Safety & Corrections, Office of State Police, Troop F
LA Department of Public Safety & Corrections, Office of State Police, Troop I
LA Department of Public Safety & Corrections, Office of State Police, Troop L
LA Department of Transportation & Development
LA Department of Wildlife & Fisheries
LA Office of State Parks
LA Office of the Governor
Lafayette Parish Homeland Security & Emergency Preparedness
Lafourche Parish Homeland Security & Emergency Preparedness
Lincoln County Emergency Management Agency
Livingston Parish Homeland Security & Emergency Preparedness
Louisiana State Library
Louisiana State University, Cooperative Extension Service
Louisiana State University, Library
Louisiana State University, Nuclear Science Center
Madison County Emergency Management Agency
Madison Parish Homeland Security & Emergency Preparedness
Mississippi Department of Health, Division of Radiological Health
Mississippi Emergency Management Agency
Ochsner Medical Center – New Orleans
Office of Homeland Security & Emergency Preparedness
Orleans Parish Homeland Security & Emergency Preparedness
Our Lady of the Lake Regional Medical Center
Plaquemine Parish Homeland Security & Emergency Preparedness
Pointe Coupee Parish Homeland Security & Emergency Preparedness
Rankin County Emergency Management Agency
Richland Parish Homeland Security & Emergency Preparedness
River Bend Station
Riverland Medical Center

Sharkey County Emergency Management Agency
Simpson County Emergency Management Agency
St. Bernard Parish Homeland Security & Emergency Preparedness
St. Charles Parish Emergency Preparedness & Homeland Security
St. Helena Parish Homeland Security & Emergency Preparedness
St. James Parish Homeland Security & Emergency Preparedness
St. John the Baptist Parish Emergency Preparedness & Homeland Security
St. Landry Parish Homeland Security & Emergency Preparedness
St. Martin Parish Homeland Security & Emergency Preparedness
St. Mary Parish Homeland Security & Emergency Preparedness
St. Tammany Parish Homeland Security & Emergency Preparedness
Tangipahoa Parish Homeland Security & Emergency Preparedness
Tensas Parish Office of Emergency Preparedness
Terrebonne Parish Homeland Security & Emergency Preparedness
Texas Department of State Health Services
US Coast Guard
US Department of Agriculture
US Department of Energy, Emergency Operations Center
US FDA, New Orleans District Office
US Nuclear Regulatory Commission, Headquarters
US Nuclear Regulatory Commission, Region IV
Warren County Emergency Management Agency
Waterford 3 SES
West Baton Rouge Parish Homeland Security & Emergency Preparedness
West Carroll Parish Homeland Security & Emergency Preparedness
West Feliciana Parish Homeland Security & Emergency Preparedness
West Feliciana Parish Hospital
West Jefferson Medical Center
Wilkinson County Emergency Management Agency
Yazoo County Emergency Management Agency

TAB 2 TO SECTION VIII

Implementing Procedures

Procedure	NUREG	Section(s) Implemented
OP-1 LDEQ Secretary (or Designee)	A.1.d	LPRRP, Basic Plan, Section V.B
	D.3	LPRRP, Chapter 1
	J.10.f	LPRRP, Chapter 9
	K.3.a	LPRRP, Chapter 9, Section V.B.1.a
	K.3.b	LPRRP, Chapter 9, Section III.A V.B.1.and V.D
	K.4	LPRRP, Chapter 9, Sections V.B and V.D
OP-2 Notification & Headquarters Activation (HQ); OP-19 Headquarters Operations Officer (HOO)	A.1.c	LPRRP, Basic Plan, Section VI, Figure 1
	A.1.d	LPRRP, Basic Plan, Section V.B
	A.4	LPRRP, Basic Plan, Section V.B; and Sections VI.A.3 and 4
	D.3	LPRRP, Chapter 1
	E.2	LPRRP, Basic Plan, Sections VI.A.5 and VI.B.5
	F.1.e	LPRRP, Chapter 3, Section III.A
	H.4	LPRRP, Basic Plan, Sections VI.A.6, VI.B.4.u
	I.8	LPRRP, Chapter 6. III.A, Tab 3and Tab 5
	J.10.e	LPRRP, Chapter 7, Sections IV.A.5 and Section IV.B.2; LPRRP, Chapter 9, Section V.B.2
	K.3.a	LPRRP, Chapter 9, Sections III.A, Section V.B.1 and Section V.D
OP-5 Field Monitoring Team (FMT)	F.1.d	LPRRP, Chapter 3, Section III.A and III.C
	H.11	LPRRP, Chapter 6, Tab 3 and Tab 4
	I.7	LPRRP, Chapter 6, Tab 3
	I.8	LPRRP, Chapter 6, III.B,Tab 3 and Tab 5
	I.9	LPRRP, Chapter 6, Tab 3, III.D and III.E
	J.10.e	LPRRP, Chapter 7, Sections IV.A.5 and Section IV.B.2; LPRRP, Chapter 9, Section V.B.2 and Tab 1
	K.3.a	LPRRP, Chapter 9, Section III.A, III.V.B.and V.D.

Procedure	NUREG	Section(s) Implemented
	K.3.b	LPRRP, Chapter 9, Section V.B
OP-7 Field Monitoring Team Coordinator (FTC)	C.2.a	LPRRP, Basic Plan, Section IV.G
	I.8	LPRRP, Chapter 6, III.B Tab 3 and Tab 5
	J.10.e	LPRRP, Chapter 7, Sections IV.A.5 and Section IV.B.2; LPRRP, Chapter 9, Section V.B.2
	K.3.a	LPRRP, Chapter 9, Section III.V.B.1and Section III.V.D
	K.3.b	LPRRP, Chapter 9, Section V.B.
OP-8 Dose Assessment Coordinator (DAC)	C.2.a	LPRRP, Basic Plan, Section IV.G
	I.10	LPRRP, Chapters 6, 7, 8 and 11
	K.3.a	LPRRP, Chapter 9, Section III.V.B. and V.D
	K.3.b	LPRRP, Chapter 9, Section V.B.
OP-9 Accident Assessment Coordinator (AAC)	C.2.a	LPRRP, Basic Plan, Section IV.G
	J.9	LPRRP, Chapter 7, Section III.A and IV.
	K.3.a	LPRRP, Chapter 9, Section III.A, V.B. and V.D
	K.3.b	LPRRP, Chapter 9, Section V.B
OP-10 Senior EOF Liaison(SEL)	C.2.a	LPRRP, Basic Plan, Section IV.G
	J.9	LPRRP, Chapter 7, Section III.A and IV.
	K.3.a	LPRRP, Chapter 9, Section III .A, V.B. and V.D
	K.3.b	LPRRP, Chapter 9, Section V.B.
OP-12 Public Information Officer (PIO)	D.3	LPRRP, Chapter 1
	E.5	LPRRP, Chapter 5, Section IV.B
	G.4.a	LPRRP, Chapter 5, Section IV.B
	G.4.b	LPRRP, Chapter 5, Section IV.B
	K.3.a	LPRRP, Chapter 9, Section III.A , V.B. and V.D
	K.3.b	LPRRP, Chapter 9, Section V.B.

Procedure	NUREG	Section(s) Implemented
OP-15 Sample Courier (SC)	H.11	LPRRP, Chapter 6, Tab 3
	J.10.e	LPRRP, Chapter 7, Sections IV.A.5 and Section IV.B.2; LPRRP, Chapter 9, Section V.B.2
	K.3.a	LPRRP, Chapter 9, Section V.B.1.a
	K.3.b	LPRRP, Chapter 9, Section V.B.1.a
OP-18 General Duties (GD)	F.1.a	LPRRP, Chapter 3, Sections III.A and III.C
	F.1.d	LPRRP, Chapter 3, Sections III.A and III.C
	H.10	LPRRP, Chapter 6, Tab 3, Paragraph G
	J.10.e	LPRRP, Chapter 7, Section IV.A.5; Section IV.B.2 and 3; LPRRP, Chapter 9, Section V.B.2 and Tab 1
	K.3.a	LPRRP, Chapter 9, Section III.A, V.B. and V.D
	K.3.b	LPRRP, Chapter 9, Section V.B
	K.4	LPRRP, Chapter 9, Sections V.B and V.D
	K.5.b	LPRRP, Chapter 9, Section V.C
OP-20 Administrative Support (ADS)	C.2.a	LPRRP, Basic Plan, Section IV.G
	K.3.a	LPRRP, Chapter 9, Section III.A, V.B and V.D
	K.3.b	LPRRP, Chapter 9, Section V.B

CHAPTER 1

Emergency Classes

I. Purpose

To establish emergency classes for fixed nuclear facility accidents, the description and purpose of each of the emergency classes, and guidance for licensee, State and local preparatory actions for each of the emergency classes.

II. Situation

A. A fixed nuclear facility accident may involve initiating conditions which are relatively minor but, through operator error or equipment failure, lead to more serious conditions which are not fully realized at the time.

B. A gradation of emergency classes is established to provide for early and prompt notification of an accident to response organizations and to assure that adequate opportunity is provided for preparatory actions prior to the off-site impact of an accident.

C. The emergency classes provide a general indicator as to the level of seriousness of an accident, as well as related guidance on off-site actions, so that response organizations have a common basis for immediate preparatory actions.

D. In addition to guidance on preparatory actions established in this chapter, recommendations on appropriate off-site protective actions will be made by the facility and by LDEQ at the time of an accident, based on independent accident assessments, specific to the particular circumstances surrounding an accident.

III. Concept of Operations

A. A fixed nuclear facility licensee will declare the emergency classes for an accident in accordance with this plan and based on an evaluation of the severity of conditions, existing or anticipated, in plant systems. The emergency classes will be included in initial notification information provided to off-site response organizations.

B. The fixed nuclear facility licensee may, subsequently, modify the initial evaluation by escalating to a more serious emergency class if plant conditions deteriorate or are expected to deteriorate, or by closing out the emergency or de-escalating to a less serious emergency class if plant conditions are realized to be less serious than anticipated or if corrective actions have resolved the initiating conditions.

C. With the initial and subsequent notification to off-site authorities of an accident and its emergency class, the licensee will also make a

recommendation to the State and Parishes on what protective actions should be taken, if any.

D. Upon notification of an accident by the licensee, LDEQ will conduct an independent accident assessment and, if and as necessary, make a recommendation to the Parishes on what protective actions should be taken, if any.

E. Based on the initial emergency class of an accident, off-site authorities will take initial preparatory actions consistent with the guidelines for off-site authority actions established in this chapter (see Tab 1) and as detailed in individual response organization implementing procedures. Subsequent preparatory and/or protective actions will be taken by State and Parish response organizations based on recommendations made by the licensee and by LDEQ.

IV. Tabs

Tab 1: Emergency Classifications and Guidelines

TAB 1 TO CHAPTER 1

Emergency Classifications and Guidelines

Classification: NOTIFICATION OF UNUSUAL EVENT (NOUE)		
Description	Licensee Actions	State and/or Local Offsite Authority Actions
Unusual events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs. Purpose Purpose of off-site notification is to (1) assure that the first step in any response later found to be necessary has been carried out, (2) bring the operating staff to a state of readiness, and (3) provide systematic handling of unusual events information and decision making.	1. Promptly inform State and/or local off-site authorities of nature or unusual condition as soon as discovered. 2. Augment on-shift resources as needed. 3. Assess and respond. 4. Escalate to a more severe class, if appropriate or 5. Close out with verbal and/or written summary.	1. Provide fire or security assistance if requested. 2. Augment response, if appropriate. 3. Stand by until verbal closeout.

Classification: ALERT		
Description	Licensee Actions	State and/or Local Offsite Authority Actions
Events are in process or have occurred which involve an actual or potential substantial degradation, of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels. Purpose Purpose of off-site alert is to (1) assure that emergency personnel are readily available to respond if situation becomes more serious or to perform confirmatory radiation monitoring if required, and (2) provide off-site authorities current status information.	1. Promptly inform State and/or local authorities of alert status and reason for alert as soon as discovered. 2. Augment resources and activate on-site Technical Support Center and on-site operational support center. Bring Emergency Operations Facility (EOF) and other key emergency personnel to standby status. 3. Assess and respond. 4. Dispatch on-site monitoring teams and associated communications. 5. Provide periodic plant status updates and meteorological assessments to off-site authorities and, if any releases are occurring, dose estimates for actual releases. 6. Escalate to a more severe class, if appropriate. 7. Close out or recommend reduction in emergency class by verbal summary to off-site authorities followed by written summary.	1. Provide fire or security assistance if requested. 2. Augment resources and bring primary response centers and EAS (formerly EBS) to standby status. 3. Alert to standby status key emergency personnel including monitoring teams and associated communications or if deemed necessary dispatch key emergency personnel including monitoring teams and associated communications. 4. Alert to standby status other emergency personnel (e.g., those needed for evacuation) and dispatch personnel to near-site duty stations. 5. Provide confirmatory off-site radiation monitoring and ingestion pathway dose projections if warranted. 6. Maintain alert status until verbal closeout or reduction of emergency class. 7. Dispatch Technical Spokesperson to the Joint Information Center (JIC) if activated. 8. Augment response, if appropriate.

Classification: SITE AREA EMERGENCY (SAE)		
Description	Licensee Actions	State and/or Local Offsite Authority Actions
Events are in process or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary. Purpose Purpose of the site area emergency declaration is to (1) assure that response centers are manned, (2) assure that monitoring teams are dispatched, (3) assure that personnel required for evacuation of near-site areas are at duty stations if situation becomes more serious, (4) provide consultation with off-site authorities, and (5) provide updates for the public through off-site authorities.	1. Promptly inform State and/or local off-site authorities of site area emergency status and reason for emergency as soon as discovered. 2. Augment resources by activating on-site Technical Support Center (TSC), on-site operational support center and near-site Emergency Operations Facility (E0F). 3. Assess and respond. 4. Dispatch on-site and off-site monitoring teams and associated communications. 5. Dedicate an individual for plant status updates to off-site authorities and periodic pressure briefings (perhaps joint with off-site authorities). 6. Make senior technical and management staff on-site available for consultation with NRC and State on a periodic basis. 7. Provide meteorological and dose estimates to off-site authorities for actual releases via a dedicated individual or automated data transmission. 8. Provide release and dose projections based on available plant condition information and foreseeable contingencies. 9. Escalate to general emergency class, if appropriate; or 10. Close out or recommend reduction in emergency class by briefing of offsite authorities at EOF and by phone followed by written summary, as soon as necessary.	1. Provide any assistance requested. 2. If sheltering near the site is desirable, activate public notification system within at least two miles of the plant. 3. Provide public within at least 10 miles periodic updates on emergency status. 4. Augment resources by activating primary response centers. 5. If not previously done, dispatch key emergency personnel including monitoring teams and associated communications. 6. Alert to standby status other emergency personnel (e.g., those needed for evacuation) and dispatch personnel to near-site duty stations. 7. Continuously assess information from licensee and off-site monitoring with regard to changes to protective actions already initiated for public and mobilizing evacuation resources. 8. Recommend placing milk animals within 2 miles on stored feed and assess need to extend distance. 9. Provide press briefings, perhaps with licensee. 10. Augment response, if appropriate. 11. Maintain site area emergency status until closeout or reduction of emergency class.

Classification: GENERAL EMERGENCY (GE)		
Description	Licensee Actions	State and/or Local Offsite Authority Actions
Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area. Purpose Purpose of the general emergency declaration is to (1) initiate predetermined protective actions for the public, (2) provide continuous assessment of information from licensee and off-site organization measurements, (3) initiate additional measures as indicated by actual or potential releases, (4) provide consultation with off-site authorities and (5) provide updates for the public through off-site authorities.	1. Promptly inform State and local off-site authorities of general emergency status and reason for emergency as soon as discovered (Parallel notification of State/local) 2. Augment resources by activating on-site Technical Support Center, on-site operational support center and near-site Emergency Operations Facility (EOF). 3. Assess and respond. 4. Dispatch on-site and offsite monitoring teams and associated communications. 5. Dedicate an individual for plant status updates to offsite authorities and periodic press briefings (perhaps joint with off-site authorities). 6. Make senior technical and management staff on-site available for consultation with NRC and State on a periodic basis. 7. Provide meteorological and dose estimates to off-site authorities for actual releases via a dedicated individual or automated data transmission. 8. Provide release and dose projections based on available plant condition information and foreseeable contingencies. 9. Close out or recommend reduction of emergency class by briefing of off-site authorities at EOF and by phone followed by written summary, as soon as necessary.	1. Provide any assistance requested. 2. Activate immediate public notification of emergency status and provide public periodic updates. 3. May recommend evacuating 2 miles radius and 5 miles downwind and shelter remaining areas within the Plume Exposure Pathway EPZ. If not done earlier, consider evacuation or shelter, as appropriate for schools and institutionalized persons in 5 miles radius. 4. Augment resources by activating primary response centers. 5. Dispatch key emergency personnel including monitoring teams and associated communications. 6. Dispatch other emergency personnel to duty stations within 5 mile radius and alert all others to standby status. 7. Provide off-site monitoring results to licensee, DOE and others and jointly assess them. 8. Continuously assess information from licensee and off-site monitoring with regard to changes to protective actions already initiated for public and mobilizing evacuation resources. 9. Recommend placing milk animals within 10 miles on stored feed and assess need to extend distance.

Classification: GENERAL EMERGENCY (GE) (continued)		
Description	Licensee Actions	State and/or Local Offsite Authority Actions
	10. If situation warrants for possible protective actions beyond the plume exposure pathway EPZ, immediately provide to the state authorities relevant current or projected information/data.	10. If situation warrants with current or projected information/data, consider necessary protective actions beyond the plume exposure pathway EPZ and coordinate this with the appropriate offsite agencies. 11. Provide press briefings, perhaps with licensee. 12. Maintain general emergency status until closeout or reduction of emergency class.

CHAPTER 2

Accident Notification

I. Purpose

A. To establish concepts and procedures for accident notifications by a fixed nuclear facility licensee to principal off-site authorities and for follow-up messages to accident notifications.

II. Situation

A. A fixed nuclear facility licensee will provide early and prompt notification to principal off-site authorities upon the declaration of any emergency class. Events will be classified by the facility operator as:

1. Notification of Unusual Event,
2. Alert,
3. Site Area Emergency, or
4. General Emergency.

B. A fixed nuclear facility licensee will provide follow-up messages to appropriate off-site authorities, relaying more complete and detailed technical information, as it is known, which will be used to perform necessary radiological conditions assessment including dose projections, and to develop off-site protective action recommendations.

C. Detailed information forms are established to ensure that accident notification and technical information provided by the facility at the time of an accident includes all essential data needed for independent off-site evaluation, assessment and response.

III. Concept of Operations

A. The facility licensee will provide initial and simultaneous notification to LDEQ, GOHSEP and all risk Parishes, immediately upon recognition that events have occurred which make declaration of an emergency class appropriate.

B. The facility licensee will provide subsequent notifications to LDEQ, GOHSEP and all risk Parishes, immediately upon recognition that events have occurred which make declaration of a different emergency class appropriate, or which warrant notification of a significant change in plant conditions.

C. All initial notifications provided by the facility licensee will contain, as it is known, information detailed in the "Notification Message Form" (see Tab 1). The facility licensee will provide technical information required to perform

necessary radiological conditions assessment including dose projections, and to develop off-site protective action recommendations, as required.

Note: GGNS' form is titled "Emergency Notification Form" instead of "Notification Message Form."

D. The facility licensee will continually update information contained on the "Notification Message Form," as it changes or becomes known, through the regular transmission of follow-up messages to LDEQ, GOHSEP and all risk Parishes.

E. LDEQ in coordination with GOHSEP will notify State departments designated to support technical assessment activities of an accident as determined by the emergency class.

F. LDEQ will notify NRC (or DOE) of an accident, as determined by the emergency class.

G. LDEQ will notify FEMA Region VI, at the emergency classification level (ECL) of ALERT and / or higher.

H. GOHSEP will notify support Parishes, and adjacent States and Parishes within the ingestion exposure pathway EPZ of an accident, as determined by the emergency class.

I. GOHSEP will notify State departments designated to support protective response activities of an accident, as determined by the emergency class.

J. GOHSEP will notify FEMA Region VI, of an accident, as determined by the emergency class.

K. State implementing procedures will detail the specific protocol & requirements for the notification of designated departments and organizations, elected officials and staff, the verification of messages and the emergency class at which notifications will be made.

IV. Tabs

Tab 1: Notification Message Form

TAB 1 TO CHAPTER 2

Sample Notification Message Form

1. THIS IS ☐ GRAND GULF ☐ WATERFORD 3 ☐ RIVER BEND WITH **MESSAGE NUMBER** F-_____
(OHL CODE NO.) _____

2. A. _____/_____ B. COMM: _____ C. TEL NO. _____
(TIME/DATE) (NAME)

3. **EMERGENCY CLASSIFICATION**:
A. ☐ NOTIFICATION OF UNUSUAL EVENT C. ☐ SITE AREA EMERGENCY E. ☐ TERMINATED
B. ☐ ALERT D. ☐ GENERAL EMERGENCY

4. **CURRENT** EMERGENCY CLASSIFICATION DECLARATION/TERMINATION Time/Date: _____/_____

5. **RECOMMENDED PROTECTIVE ACTIONS**:
A. ☐ No Protective Actions Recommended At This Time (Go to Item 6).
B. ☐ **EVACUATE** _____
☐ **SHELTER** _____

6. **INCIDENT DESCRIPTION/UPDATE/COMMENTS**: _____

7. **REACTOR SHUT DOWN**? ☐ NO ☐ YES Time/Date: _____/_____

8. **METEOROLOGICAL DATA**:
A. Wind Direction **FROM** _____ Degrees at _____ MPH
B. Sectors Affected (A-R): _____
C. Stability Class (A-G): _____
D. Precipitation: ☐ None ☐ Rain ☐ Sleet ☐ Snow ☐ Hail ☐ Other _____

9. **RELEASE INFORMATION:**
A. ☐ No RELEASE (Go to Item 13)
B. ☐ A RELEASE is occurring BELOW federally approved operating limits
C. ☐ A RELEASE is occurring ABOVE federally approved operating limits
D. ☐ A RELEASE OCCURRED BUT STOPPED
E. Release started at _____ (time) Release stopped at _____ (time)
Release duration _____ hrs. (actual or expected)

10. **TYPE OF RELEASE**:
A. ☐ Radioactive Gases B. ☐ Radioactive Airborne Particulates C. ☐ Radioactive Liquids

11. **RELEASE RATE**:
A. NOBLE GASES _____ Ci/s B. IODINES _____ Ci/s

12. **ESTIMATE OF PROJECTED OFFSITE DOSE**:
A. Projections for _____ hours based on: ☐ Field Data ☐ Plant Data ☐ Default Data
B. (TEDE) WB DOSE COMMITMENT (mRem)
Site Boundary _____ 5 miles _____
2 miles _____ 10 miles _____
C. (CDE) THYROID DOSE COMMITMENT (mRem)
Site Boundary _____ 5 miles _____
2 miles _____ 10 miles _____

13. **MESSAGE APPROVED BY:** _____ **TITLE:** _____

EXAMPLE ONLY

CHAPTER 3

Communications

I. Purpose

To outline the communications systems that will be utilized for notification, exchange of information, direction and control and field operations in the event of an accident.

II. Situation

A. Reliable communications systems are established for the notification by fixed nuclear facilities to principal off-site authorities of an accident and for the exchange of information during an accident.

B. Communications systems are established for direction and control of protective response operations of State and Parish government.

C. Communications systems are established for the coordination of field operations in support of protective response and for the transmission of field measurement and sampling information.

III. Concept of Operations

A. Notification and Exchange of Information

1. Each fixed nuclear facility affecting the State will provide notification to LDEQ, GOHSEP, and risk Parishes within the plume exposure pathway EPZ of the facility on a direct dedicated telephone circuit, or other acceptable direct means of communications.

2. Subsequent facility messages providing technical information to LDEQ, GOHSEP, and all risk Parishes for accident assessment purposes will be given over the direct dedicated telephone circuit or other acceptable direct means of communications.

3. Electronic notification system using secure internet ports may be utilized. Notifications are originated from Control Room or Emergency Operation Facilities to a number of offsite response organizations, both state and local.

4. Commercial telephone system or radio equipment will be used as appropriate, as a backup to the direct dedicated telephone lines and will be used for notification and mobilization of State and local organizations having response assignments as well as emergency personnel in each response organization.

5. Twenty-four hour coverage of the direct dedicated telephone circuit will be provided by LSP EOC Sergeant under Crisis Response Section

located in 7667 Independence Blvd, Baton Rouge, Louisiana maintains continuous operation.

6. State and local implementing procedures will detail the specific procedures for the receipt and dissemination of messages. These procedures will identify organizational titles and alternates for both ends of the communications links. Operating Procedure 19 (OP-19) Headquarters Operations Officer (HOO) details emergency personnel mobilization procedures.

B. Direction and Control

1. GOHSEP and affected risk Parishes will utilize Louisiana Wireless Information Network (LWIN) and an internet-based incident management system for the coordination of protective response operations and support during an accident.

2. GOHSEP may utilize the National Warning System (NAWAS) to coordinate protective response operations with adjacent States within the plume and ingestion exposure pathway EPZs of a facility. The FNARS (Federal National Radio System) radio systems and satellite phone system will be utilized as back up for interstate communications.

C. Field Operations

1. Those departments of State government, responsible for directly supporting Parish protective response operations (e.g. traffic control, access control, security, warning, evacuation, etc.) or for supporting State field monitoring and sampling activities, will utilize the established department radio communications systems.

2. The Louisiana Wireless Information Network (LWIN), a statewide truncated radio communication system, will be utilized for the communication of field measurement and sampling information and for the coordination of field monitoring team activities. Other means of communication will be identified and used as backup.

D. Medical Support

Fixed and mobile medical facilities that will provide emergency medical support in the vicinity of each nuclear facility may utilize local emergency medical service communications systems. Arrangements are established to provide for a coordinated communications system in support of a medical emergency.

E. Federal Support

Commercial telephones will be utilized for communication with Federal emergency response organizations. Backup systems include cell phones and satellite phones.

CHAPTER 4

Public Alert/Notification

I. Purpose

To identify systems and establish concepts for the alert and notification of the public in the event of a fixed nuclear facility accident.

II. Situation

A. The public alert/notification system is a combination of Parish/State and Utility alert systems (sirens, monitors, mobile loudspeakers, etc.) as well as alert stations for notification.

B. Upon occurrence of an accident, emergency public information activities will be initiated to inform the public of the nature and severity of an accident. Emergency public information will be accomplished through news releases by the facility and key response organization spokespersons. (See Chapter 5, Public Information.)

C. When a decision is made to recommend an initial protective action or combination of protective actions to the public, the public alert/notification system will be activated.

D. Sirens may be activated within the Parish prior to issuing a message to alert the population within the 10-mile EPZ of forthcoming emergency public information or of a protective action requirement. Siren sounding is coordinated between the Parishes or the Parish(es) and GOHSEP. Although GOHSEP coordinates the siren sounding time, GOHSEP is not capable of sounding sirens.

E. An internet-based Emergency Alert System (EAS) program is operated by GOHSEP. The system has the capability to send prerecorded and original messages to radio stations or commercial television stations as both voice and text. The system can call homes within a specific area, send TTY and SMS messages and broadcast in other languages. Messages and broadcast times are coordinated with the Parish.

III. Messages

A. Draft messages for risk areas are developed for each major protective action or combination of protective actions that may be recommended for various contingencies.

B. General area-wide messages are developed for disseminating emergency instructions and information to the public within the ingestion exposure pathway EPZ.

C. Written messages will be provided to stations covering each of the fixed nuclear facilities affecting the State. Messages will be coded to assure that the specific message appropriate to the protective action recommended for an accident will be used at the proper time.

IV. System Coverage and Testing

A. The minimum design objectives for coverage by the alert/notification systems at each site are:

1. Capability for providing both an alert signal within 15 minutes of a protective action decision by parish officials and an informational or instructional message to the population on an area-wide basis throughout the plume exposure pathway EPZ.

2. The initial notification system will assure direct coverage of essentially 100% of the population within 5 miles of the site.

3. Special arrangement will be made to assure 100% coverage within 45 minutes of the population who may not have received the initial notification within the entire plume exposure pathway EPZ.

   a. Waterford 3 SES maintains contracts with local companies to provide helicopter service and backup route alerting.

   b. River Bend Station has 100% siren coverage; however, parishes will utilize whatever means necessary to accomplish this should any portion of siren fail.

   c. Tensas Parish relies upon the Tensas Parish Sheriff's Office to perform mobile route alerting.

B. The minimum testing requirements for the alert/notification systems are:

1. The parish siren systems for the plume exposure pathway for each fixed nuclear facility will be tested as follows:

   a. A siren sounding and silent test will be conducted approximately monthly with appropriate log entry.

   b. A growl or other comparable test(s) will be conducted quarterly and when preventive maintenance and system upgrade or modification is performed. For electronic siren systems, the silent test effectively satisfies requirements for a growl test.

   c. A complete cycle test of the alert signal will be conducted annually, to include broadcast of a test message over the appropriate station.

2. The utilities and risk parishes are responsible for performing a monthly siren test.

a. Sirens will be tested during the first week of each month.

b. LDEQ will maintain records which verify the required tests of alert and notification systems have been performed as required.

NOTE: For more information regarding performance of siren testing see:

- Grand Gulf Nuclear Station
  - 01-S-10-3 - Emergency Preparedness Department Responsibilities
- River Bend Station
  - EPP-2-701 - River Bend Station Support Manual: Emergency Planning Procedure: Prompt Notification System: Maintenance & Testing
- Waterford 3 SES
  - St. Charles Parish Emergency Plan Implementing Procedure: Emergency Operations Center – Attachment 8: Public Alert.
  - St. John the Baptist Parish Emergency Operations Plan Standard Operating Procedure: Emergency Operations Center [ESF #5 Emergency Management] – Attachment 4: Public Alert/Notification.

CHAPTER 5

Public Information

I. Purpose

To establish public information program for protecting the public and for properly responding to accidents at fixed nuclear facilities affecting Louisiana. This program will include information on radiation, plans for responding to public alert notification systems, and plans for informing the public.

II. Situation

A. Effectively protecting the public during a fixed nuclear facility accident will depend largely on how well an appropriate education program is presented to the public before such an event happens.

B. Timely distribution of clear, concise information and instructions to the public during an accident is extremely important.

C. Coordination of emergency information to the public by the facility and governmental authorities also is extremely important.

D. The news media will be promptly and completely informed by the facility and appropriate governmental agencies.

III. Responsibilities

A. The Louisiana Department of Environmental Quality (LDEQ), in conjunction with the appropriate utility, is responsible for developing, coordinating, and implementing pre-emergency public information programs. These programs will include information on radiation, fixed nuclear facility accidents, and plans for protecting the public during an accident.

B. The Governor's Office of Homeland Security & Emergency Preparedness (GOHSEP) coordinates dissemination of emergency information to the public during an accident at River Bend Station through activation of the Emergency Alert System (EAS). The EAS is part of the coordinated State/Parish public alert system. St. Charles Parish and Tensas Parish Offices of Homeland Security & Emergency Preparedness are responsible for coordinating with EAS broadcasting station during accident at Waterford-3 and Grand Gulf Nuclear Station.

IV. Concept of Operations

A. Public Information

1. LDEQ and GOHSEP will coordinate a comprehensive public information program with the appropriate utility. This program will include distribution of appropriate information to the public annually,

informing them on how they will be notified in the event of an accident and what actions they should take. Included will be:

a. Information on radiation.

b. Sources of additional information.

c. Protective measures for the public.

d. Preparations for the persons with disabilities and access/functional needs.

e. Protective Actions for ingestion pathway exposure

2. LDEQ will develop information on radiation, potential hazards in fixed nuclear facility accidents, and basic protective measures during such accidents. This information will be distributed widely among the public.

3. The utility operating a fixed nuclear facility will coordinate its public information programs with LDEQ.

4. LDEQ and GOHSEP will coordinate the development of educational materials with the appropriate utility and Parish governments. This material will include detailed information on location of shelters, evacuation routes, risk areas, pick-up points, school districts, and reception centers.

5. Each utility will update maps showing evacuation routes, evacuation areas, reception areas and other special facilities while preparing the annual public information material.

6. The annual dissemination of public information materials will feature printed material especially designed to encourage people to keep them as handy references for an accident. This material may include information in telephone books, wall stickers, calendars, brochures and various publications designed to inform simply and quickly.

7. LDEQ has developed the brochure “Louisiana Radiological Emergency Information for Farmers, Food Processors and Distributors” to provide public Ingestion Pathway information. This brochure is delivered electronically each year for public distribution to the following parties:

a. The Emergency Preparedness Directors of every Parish within the 50-Mile EPZ

b. The LDAF Assistant Commissioner for Emergency Programs

c. The REP Program Manager for Mississippi Emergency Management Agency

d. The Disaster Program Coordinator for the LSU Ag Center Extension Services, for dissemination to the county agents

8. Additional public information materials will include posting of signs, decals, or notices at public facilities, to provide the transient population within the plume exposure pathway Emergency Planning Zone with information on how to protect themselves. Parish emergency officials will determine the locations to supply with this information. The locations and their efficacy are to be reassessed and the information at each site updated at a frequency established by the parish.

9. LDEQ, GOHSEP, Parish governments, and each utility will conduct an annual program to acquaint the news media with coordinated emergency plans, information on radiation, and points of contact for emergency public information during an accident. An annual program for each fixed nuclear facility will include participation by principal state response organizations, parish governments, and fixed nuclear facility representatives.

B. Emergency Public Information

1. The Governor's Press Secretary or designee is the spokesperson for the State during an accident and is responsible for the release of statewide emergency public information to the news media.

2. The LDEQ Secretary or designee and the Director or designee of the Governor's Office of Homeland Security/Emergency Preparedness will review and coordinate (or assure of such review and coordination by competent individuals of) all emergency public information available from State agencies and forward it to the Governor's Press Secretary.

   a. The GOHSEP will periodically provide the Director or designee with information on the status of the State's operational response to the accident.

   b. An LDEQ Technical Representative will periodically provide to the LDEQ Secretary or designee technical information including a description of the accident, its severity and degree of danger to the public and the recommended protective response.

3. Each risk Parish will designate a Public Information Officer (PIO) who will release emergency public information to the news media pertinent to its parish.

4. A rumor control center will be activated and operated by the JIC hosting agency throughout the duration of an accident. This center will maintain an accurate and up-to-date account of the accident, and will provide this information to, the public in response to public inquiry. For more detailed information on each rumor control center, see the

appropriate document: Attachment 1, W-3; Attachment 2, GGNS; or Attachment 3, RBS.

5. Media monitoring will be implemented in conjunction with JIC locations.

6. The Governor's Press Secretary will exchange information with the spokespersons of applicable official organizations which may be involved in compiling information during an accident. These organizational spokespersons will include, but will not be limited to the following:

   a. Parish Emergency Public Information Officers/ Spokespersons

   b. Fixed Nuclear Facility Public Information Officers

   c. Spokesperson for the Nuclear Regulatory Commission (NRC)

   d. Spokesperson for the Federal Emergency Management Agency (FEMA)

7. Each PIO will utilize telephone, electronic mail, fax, cell phone and any other means of communication to communicate with respective agency regarding information.

8. The Governor's Press Secretary will notify an organizational spokesperson prior to the release of statewide emergency public information to the news media.

9. Other organizational spokespersons will notify the Governor's Press Secretary prior to the release of emergency public information to the news media.

10. During an accident, other organizational spokespersons may participate in periodic joint news media briefings at the designated Joint Information Center.

Note: Physical Locations and implementing procedures for each utility listed below.

   a. Grand Gulf Nuclear Station

      i. Grand Gulf Nuclear Station Joint Information Center

         Mississippi Emergency Management Agency,

         1 MEMA Drive, Pearl, Mississippi

      ii. Grand Gulf Nuclear Station 10-S-01 34 Joint Information Center (JIC) Operations

   b. River Bend Station –

      i. River Bend Station Joint Information Center

Governor's Office of Homeland Security and Emergency Preparedness
7667 Independence Blvd, Baton Rouge, Louisiana

ii. Alternate Joint Information Center
Gulf States Utilites
446 North Blvd, Baton Rouge, Louisiana

iii. Joint Information center (JIC) Staff Position Instructions ECP-2-001

iv. Joint Information Center EIP-2-023

c. Waterford-3 Steam Electric Station

i. Waterford-3 Steam Electric Station Joint Information Center
Governor's Office of Homeland Security and Emergency Preparedness,
7667 Independence Blvd, Baton Rouge, Louisiana

ii. Joint Information Center Activation, Operation and Deactivation EPP-423_0_008-1

CHAPTER 6

Accident Assessment

I. Purpose

To establish methods and procedures for the assessment of a fixed nuclear facility accident having off-site effects and for the determination of protective action recommendations following this assessment.

II. Situation

A. At the time a fixed nuclear facility accident occurs, the accident assessment functions of the facility and State government will be accomplished in accordance with specific Federal guidance as well as by the plans and procedures that have been established to deal with such occurrences.

B. LDEQ and each fixed nuclear facility conduct ongoing environmental surveillance programs in the plume exposure pathway EPZ surrounding each plant. Should an emergency situation warrant, LDEQ and the affected facility will be prepared to initiate emergency monitoring systems in the plume exposure pathway EPZ. LDEQ will also undertake environmental sampling and monitoring in the ingestion exposure pathway EPZ during the course of an accident and during recovery operations as warranted.

C. LDEQ will use data provided by the facility to develop its initial assessment of the accident. This assessment will produce information upon which State protective action recommendations are based.

III. Concept of Operations

A. LDEQ is the primary State agency for fixed nuclear facility emergency response and accident assessment.

1. At the Alert class, LDEQ will bring its headquarters in Baton Rouge to an increased state of readiness.

   a. LDEQ will verify with GOHSEP, the notification of State departments designated to support technical assessment activities of an accident as determined by the emergency class.

   b. LDEQ will notify NRC and/or DOE of an accident as determined by the emergency class.

   c. LDEQ in coordination with GOHSEP will notify FEMA, Region VI of an accident as determined by the emergency class.

   d. Key LDEQ personnel will be alerted and mobilized, as necessary.

e. Communications will be maintained, as a minimum, with the facility, the affected Parishes, and the State EOC upon its activation.

f. LDEQ's Contract Laboratory will notify their staff and begin to mobilize.

2. LDEQ Emergency Response Teams will be dispatched when plant conditions deteriorate to a point where the health or safety of the public may be jeopardized. Continuous communications will be maintained between deployed LDEQ teams, the nuclear facility, and the State EOC for the duration of the emergency.

a. Field Monitoring Teams (FMT) will deploy to staging areas near the facility, and will perform monitoring and sampling activities under the direction of the FMT Coordinator to provide data for verification of previously projected results and for further assessment of environmental radiological conditions.

i. Monitoring will be conducted in the plume exposure pathway EPZ to determine the ambient levels of noble gases, iodines, and other fission products.

ii. Samples will be taken in the ingestion exposure pathway EPZ, as necessary, of air, surface water, potable water, raw milk, vegetables and crops. Analyses of these samples will take place both in the field and at LDEQ's Contract Laboratory.

b. An EOF Liaison Team will deploy to the plant's EOF to perform FMT coordination, dose and accident assessment, and protective action recommendation functions.

c. A technical liaison person will be dispatched to the State EOC to advise the LDEQ Secretary or designee, regarding protective action recommendations.

d. The need for any additional equipment or personnel needed for sampling or monitoring operations will be addressed by LDEQ through its Radiological Emergency Planning and Response unit.

B. LDEQ will make protective action recommendations for both the plume exposure and ingestion exposure pathway EPZs during the course of an accident and recovery operations.

1. Protective action recommendations for the plume exposure pathway EPZ will be based on the U.S. Environmental Protection Agency (EPA) Protective Action Guides (PAGs) as found in U.S. EPA "Manual of Protective Action Guides and Protective Actions for

Nuclear Incidents," as well as on projected dose calculations and other circumstances of an accident. (See Tabs 1 and 2.)

a. Dose assessment calculations will be made by LDEQ utilizing one or more of the following:

   i. Facility supplied information on accident or reactor conditions, radiological release rates and meteorological conditions.

   ii. Sampling and monitoring data as supplied by the FMT.

   iii. Centerline measurement data supplied by the FTC (see OP-7) Field Team Coordinator.

   iv. In-house data processing and computer programming capabilities are used to perform dose assessment for key isotopes. A manual method of calculation will be available as a backup. The broad-scope methodology for performing dose assessment is as established in the U.S. EPA "Manual of Protective Action Guides and Protective Actions for Nuclear Accidents" (See Tab 1).

   v. IBM compatible computer with REDAM software, RASCAL software, and a printer. Available backup equipment: laptop, calculator and utility specific hand calculation tables and formulas.

   vi. NRC dose assessment model program RASCAL.

b. For further details, see LDEQ Radiological Emergency Response Operating Procedure 8 (OP-8) Dose Assessment Coordinator. LDEQ will use the U.S. EPA PAGs as a basis for recommending protective actions to the public within the plume exposure pathway EPZ.

   i. The PAGs correspond to projected doses which serve as guides to initiate predetermined protective actions.

   ii. Although the PAGs provide standardized criteria for selecting a predetermined action, LDEQ will reserve the flexibility to base any recommendation for protective action on its judgment of the emergency situation.

c. LDEQ will also consider additional factors, such as the circumstances surrounding the accident, when considering protective action recommendations. Examples of these factors include:

   i. the nature of the accident

   ii. mode of release

iii. meteorological conditions

2. LDEQ will also make protective action recommendations for the ingestion exposure pathway EPZ to prevent exposure to the population from radiological material found in food or water. These recommendations will be based on dose projections that are performed following the analysis of environmental samples or other relevant data, as based on U.S. Food and Drug Administration guidance, as well as the judgment of circumstances surrounding the accident.

   a. Dose projections will be calculated for milk and dairy products, other foodstuffs and potable water. These calculations will be based on laboratory analysis of samples collected by and applicable data provided by the FMT.

   b. The U.S. Food and Drug Administration (FDA) is the responsible agency for developing criteria relating to the acceptability of food for human consumption.

      LDEQ will use the current FDA guidance, entitled “Accidental Radioactive Contamination of Human Food and Animal Feed: Recommendations for State and Local Agencies”, dated August 13, 1998, as a basis for assessing food chain contamination.

   c. The EPA is the responsible Federal agency for developing criteria relating to domestic drinking water contamination. LDEQ will use guidance Found in the “U.S. Environmental Protection Agency, National Interim Drinking Water Regulations,” Dec. 24, 1975 when making potable water recommendations.

   d. There is a range of circumstances and conditions which could influence recommendations for protection of foodstuffs and water from contamination.

C. The Senior LDEQ representative will evaluate the various factors involved in assessing the accident in coordination with the facility's senior representative, and forward any protective action recommendations to the LDEQ Secretary or designee.

D. The LDEQ Secretary or designee and the Director or designee of GOHSEP will finalize the protective action recommendations, which will be transmitted to the affected local governments for consideration of implementation. (See Chapter 7, Protective Response for the Plume Exposure Pathway EPZ, and Chapter 8, Protective Response for the Ingestion Exposure Pathway EPZ, sometimes referred to as Ingestion Planning Zone (IPZ).)

IV. Tabs

A. **Tab 1** U.S. EPA Protective Action Guides
B. **Tab 2** Additional Factors Influencing Protective Action Recommendations for the Plume Exposure Pathway EPZ
C. **Tab 3** Field Monitoring Team Operational Methods, Procedures and Equipment
D. **Tab 4** LDEQ Fixed Nuclear Facility Monitoring Program
E. **Tab 5** American Radiation Services International (ARS)
F. **Tab 6** Radiological Emergency Response Organizational Chart

TAB 1 TO CHAPTER 6

U.S. EPA Protective Action Guides

I. Introduction

A. The Protective Action Guides (PAGs) used by the State of Louisiana in the event of an accident requiring response at a fixed nuclear facility are those found in the U.S. EPA "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents." These PAGs apply to the general public and emergency workers for exposure to external gamma radiation and to airborne radionuclides.

B. PAG is the projected dose level at which protective actions are warranted. The PAG does not represent an acceptable dose, but is used to minimize the risk from an event that is occurring or has occurred.

C. The values expressed for the PAGs are used for planning purposes. Under actual accident conditions, LDEQ will use the PAGs in conjunction with its judgment of the situation and circumstances to arrive at a recommendation for protective actions.

II. PAGs for the Early Phase of a Nuclear Incident*

Protective Action	PAG (projected dose)	Comments
Evacuation (or sheltering)	1-5 rem†	Evacuation (or, for some situations, shelter‡) should normally be initiated at 1 rem. Further guidance is provided in Section 2.3.1
Administration of stable iodine	25 rem§	Requires approval of State medical officials.

* EPA-400-R-92-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, Table 2-1

† The sum of the effective dose equivalent resulting from exposure to external sources and the committed effective dose equivalent incurred from all significant inhalation pathway during the early phase. Committed dose equivalents to the thyroid and to the skin may be 5 and 50 times larger, respectively.

‡ Sheltering may be the preferred protective action when it will provide protection equal to greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site-specific conditions (see Section 2.3.1).

§ Committed dose equivalent to the thyroid from radioiodine.

III. Guidance on Dose Limits for Workers Performing Emergency Services*

Dose limit† (rem)	Activity	Condition
5	all	
10	protecting valuable property	lower dose not practicable
25	lifesaving or protection of large populations	lower dose not practicable
>25	lifesaving or protection of large populations	only on a voluntary basis to persons fully aware of the risks involved

* EPA-400-R-92-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, Table 2-2

† Sum of external effective dose equivalent and committed effective dose equivalent to non-pregnant adults from exposure and intake during an emergency situation. Workers performing services during emergencies should limit dose to the lens of the eye to three times the listed value and dose to any other organ (including skin and body extremities) to ten times the listed value. These limits apply to all doses from an incident, except received in unrestricted areas as members of the public during an intermediate phase of the incident

TAB 2 TO CHAPTER 6

Additional Factors Influencing Protective Action Recommendations for the 10-mile EPZ

Before a recommendation for plume exposure protective action is transmitted to the LDEQ Secretary or designee, other factors will be considered along with dose projection and the protective action guides. These factors include, but are not limited to:

I. The nature of the accident

A. The severity of the accident and its anticipated duration will play an important role in reaching a protective action decision.

B. The nature of the accident will indicate:

1. Available warning time
2. Probable duration of discharge
3. Quantities of radionuclides discharged
4. Composition of discharged radionuclide mixture

II. Wind speed

A. Wind speed will influence the size of the area selected for protective action as well as any additional sectors for protection.

B. Considerations based on wind speed

1. Low wind speeds are associated with a high degree of variability and intermittent direction changes. Winds of this type will take longer to carry material a specific distance. Low wind speed will usually influence the consideration of a small radius for protective action.
2. High wind speeds display a low degree of variability but have the capacity to deliver effluents to a particular location rapidly. High wind speeds will be associated with a small radius for protective action and an extended sector configuration for similar protective action.

III. Weather

Weather, principally precipitation, will influence the effluent in the plume. Precipitation occurring during plume passage will serve to remove compounds of radioiodines and particulate fission products from the plume in direct proportion to the precipitation accumulation rate. This will result, however, in an increase in surface deposition, which may indicate that measures be taken to protect against contaminated vegetation, soil and water.

TAB 3 TO CHAPTER 6

Field Monitoring Team Operational Methods, Procedures, and Equipment

I. Composition

The emergency response team includes multiple Field Monitoring Teams (FMT), with each team composed of a minimum of two people performing the functions of team captain, team recorder, and field technicians. Initially, the state FMT will be directed and controlled from the LDEQ headquarters. Subsequently, the teams are controlled by the FMT Coordinator, in accordance with LDEQ Radiological Emergency Response Operating Procedure 7 (OP-7) Field Monitoring Team Coordinator, located at the plant's EOF from where the utility's field teams are also controlled.

II. Role

A. Accident assessment and control of field activities may begin at the LDEQ headquarters, but will be eventually carried out at the EOF upon its activation. Field team coordination from the EOF will continue until off-site radiation levels indicate that assessment based on field data is no longer required.

B. Once the emergency response teams are declared operational at the EOF, State EOC and other designated facilities, LDEQ headquarters will then serve as a backup primarily for the EOF Liaison Team, and will maintain communication with the state EOC as necessary.

III. Activation and Notification

LDEQ Emergency Response Teams will be activated at the time of an accident in accordance with LDEQ Radiological Emergency Response Operating Procedure 2 (OP-2) Notification and Headquarters Activation. During non-working hours, the Single Point of Contact (SPOC) after-hour personnel will be notified of an accident as part of an initial notification. SPOC will, in turn, notify the LA State Liaison Officer (SLO) for the NRC and other appropriate individuals via commercial telephone.

A. <u>Deployment time</u>

Deployment time for LDEQ field teams is difficult to express. Many factors must be taken into account.

1. Is it a work day, a holiday or the weekend?
2. Is it daytime or nighttime?
3. Have the teams been on standby and already inventoried their kits and performed operations checks?
4. What are the weather and road conditions?
5. Will the team have to detour to avoid a plume?
6. Which utility is having the event?

Per Mapquest.com, the minimum time to a utility from LDEQ Headquarters is: GGNS (Tensas Parish) – 2.5 hours; RBS – 0.5 hours; W3SES – 1.25 hours. LDEQ does not utilize pre-determined staging areas and therefore cannot provide time estimations to specific staging areas.

B. Transportation

Vehicles are assigned to LDEQ and may be utilized in radiological emergencies for deployment to various response locations as well as for environmental monitoring. The vehicles will be maintained in a state of readiness for immediate deployment of LDEQ emergency response personnel to locations around the fixed nuclear facility. Appropriate LDEQ emergency personnel, including drivers, will be issued identification passes which will facilitate entry into controlled areas.

C. Communications

Each of the LDEQ vehicles is equipped with a two-way radio capable of communicating with each other and with the EOF. Backup communication systems are available, including handheld radios, cell phone, satellite phone and commercial phone. The LDEQ field monitoring communications system will be used for passing field sampling and monitoring information to the EOF or LDEQ headquarters, and for coordination of field monitoring team activities.

D. Operations

1. The Field Team Coordinator will be responsible for insuring that each field team member is provided dosimetry equipment and that adequate records of members' exposures are maintained in accordance with the Emergency Worker Radiation Exposure Record. (See Chapter 9, Radiological Exposure Control.)

2. Per the LDEQ Radiological Emergency Response Operating Procedure 5 (OP-5) Field Monitoring Team, the Field Monitoring Teams will perform the following operations using their emergency response kit (See OP-5 Emergency Response Kit Checklist):

   a. Direct radiation monitoring of noble gases, iodines and other fission products.

   b. Collection of samples

      i. Air – particulate and radioiodines

      ii. Water – potable and surface water sources

      iii. Soil

      iv. Vegetation and crop

      v. Raw milk

3. The Field Team Coordinator will determine a meeting point, based upon the current plant and field data, for the Field Monitoring Teams to deliver samples to the Sample Courier. The Sample Courier, according to LDEQ

Radiological Emergency Response Operating Procedure 15 (OP-15) Sample Courier, will deliver the samples to the LDEQ's Contract Laboratory for analysis. The Sample Courier Kit (See OP-15 Sample Courier Check List) will be utilized for safety purposes.

E. Monitoring and Sampling

1. LDEQ is assigned the responsibility for radiological monitoring, sample collection, and analyses and will supply and maintain its own specialized equipment and modes of transportation. Quarterly, or after use, LDEQ personnel will inspect, inventory and check applicable emergency equipment and instrumentation. Calibration of emergency monitoring equipment shall be performed annually or following manufacturer's recommendations. (See Table 1) Calibration and maintenance of equipment, instrumentation and dosimetry is performed on a rotational basis allowing adequate quantities to be available at all times.

2. The LDEQ Field Monitoring Teams are equipped with field counting device capable of detecting 10^{-7} µCi/cc of radioiodine. Prior to transfer samples to the Contract Lab, air samples will be field measured and recorded.

3. The LDEQ Contract Laboratory is capable of analyzing samples for a protracted time period as determined during an event. This will include off-hours operations if necessary. Samples will be received per the contract lab procedures.

F. Initial Assessment

1. LDEQ's EOF team will conduct the initial assessment for both airborne and waterborne releases, based on information provided by the facility on plant conditions and meteorology. Radiation surveys and sample analyses will supplement this initial assessment. Water samples will be taken from the Mississippi River, upstream and downstream from the discharge structure of the fixed nuclear facility.

2. Airborne Releases:

   a. The initial assessment of a radiological accident establishes the extent of immediate protective actions by calculating projected dose commitment resulting from exposure to the radioactive release. The exposure pathways of concern during the first few hours after an atmospheric release include:

      i. external exposure from immersion in the radioactive plume, and

      ii. external exposure due to ground shine

      iii. internal exposure due to the inhalation of radionuclides.

b. In the first exposure mode, the primary nuclides involved are the noble gases, iodines and particulates, and their associated daughters. In the second and third exposure modes, the primary nuclides are the iodine fission products and particulates. In the first case for whole body dose (TEDE Total Effective Dose Equivalent) calculation, irradiation due to immersion in the plume, inhalation, and ground shine are considered (TEDE). Due to the nature of manifestations of iodine in the body, the inhalation of iodine will result in exposure primarily to the thyroid. Iodines, particulates, and noble gas release rates, wind speed and direction, and meteorological stability class will be provided by the facility as shown in the "Notification Message Form." (See Tab 1 to Chapter 2.)

c. The location of the radioactive plume resulting from an airborne release will be plotted by LDEQ using information provided by the facility and/or field monitoring teams.

3. Waterborne Releases:

The potential exposure pathways involved in a liquid release assessed for short-term exposure include:

a. ingestion due to drinking of potable water supplies downriver

b. swimming

c. boating

G. Tracking Plumes

1. Assistance from outside agencies:

a. Federal and surrounding states assets may be requested during plume phase according to LPRRP Basic Plan Section VII.

b. EOF team may request licensee's field team data for the plume's peak concentration, if applicable.

H. Long Range Assessment

After the initial assessment, LDEQ may direct its monitoring teams to the 50-mile ingestion exposure pathway EPZ and establish environmental monitoring to assure that the population is not exposed to contaminated water or food in excess of established States and/or Federal limits. If such contamination does exist, the LDEQ Secretary or designee will work together with the Department of Health and Hospitals to provide advice and guidance on diversion or destruction of such products and advise to remove them from the food chain.

TABLE 1, TAB 3 TO CHAPTER 6

Sampling and Monitoring Equipment

I. Instrumentation

The following instrumentation and equipment are available at the LDEQ office for use by authorized personnel in responding to radiological emergencies. Additional portable instrumentation e.g. (Civil Defense equipment) may be obtained from other sources such as GOHSEP for use during emergencies.

Dosimetry			
Quantities Required	13	DRD	
	56	OSL	
Quantities Available	32	DRD	
	67	OSL	
RADOS Dosimeters	10		Calibrated Annually
Dosiman Dosicard Dosimeters	31		Calibrated Annually
Landauer Luxel OSL	67		Changed Monthly
Portal Monitors			
Johnson Nuclear AM-801	2		Quarterly Ops Check
Radiological Survey Instruments			
Quantities Required	10		
Quantities Available	20		
Ludlum Scaler 2000	10		Calibrated Annually
Ludlum 14C	9		Calibrated Annually
Ludlum 2241	3		Calibrated Annually
Ludlum 2241-2	6		Calibrated Annually
Canberra Inspector 1000	1		
SAM 940	1		
Air Sampling			
RADeCO H-809C	6		Calibrated Annually
RADeCO H-810DC	8		Calibrated Annually
RADeCO HD28A	8		Calibrated Annually
Laboratory Equipment			
See LDEQ Contract Lab (Tab 5 to Chapter 6)			

II. Sampling

A. Collection capabilities

1. Air
2. Water
3. Milk
4. Soil and Silt
5. Biota

B. Sampling Supplies

1. A number of identical mobility kits are maintained in a nearly complete package for a quick response. Each kit is inventoried quarterly to assure a constant state of readiness.
2. When Field Monitoring Team deployment appears likely, each kit is inventoried against a list of required supplies and equipment, and put in the vehicle assigned to each team. Portable instrumentation (detectors, air samplers, etc.) is checked for calibration status and operability prior to deployment.
3. The inventory list is reviewed after each use and updated as required, along with the standard operating procedure of which it is a part.

III. Whole Body Counter

The services of the whole body counting facility may be requested in coordination with the Department of Radiology, LSU - Shreveport Medical Center, or with the Radiation Emergency Assistance Center/Training Site (REAC/TS) of the Oak Ridge Institute for Science and Education.

TAB 4 TO CHAPTER 6

LDEQ Fixed Nuclear Facility Monitoring Program

I. Routine Environmental Surveillance and Monitoring Program

A. LDEQ has fixed sites available for air, water, milk (if available), vegetation and crop samples within the 10-mile EPZs of each fixed nuclear facility affecting the State. The Louisiana Department of Environmental Quality (LDEQ) maintains a routine environmental surveillance and monitoring program at these locations.

B. The network of fixed monitoring sites will be valuable after an event has occurred at one of the utilities. Although sites may be inaccessible during the plume phase of an emergency, they would be after a release has been stopped. Samples from these sites would assist in intermediate response decisions and for long range recovery efforts. At the time of an accident, LDEQ will expand its monitoring system to include the ingestion exposure pathway EPZ (approximately 50 miles in radius) surrounding each facility.

II. Emergency Sampling Program for the Ingestion Exposure Pathway EPZ

A. Water

Immediately following an accident with off-site consequences, and at prescribed intervals thereafter, samples will be drawn from appropriate surface and public drinking water supplies.

B. Surface Water Samples

Upon reporting to the affected area, LDEQ personnel will collect one-gallon samples from major waterways. These samples will be analyzed for radioactivity content utilizing a multi-channel analyzer equipped with a Ge(Li) or high purity germanium detector.

C. Potable Water Samples

One-gallon samples will be collected from public drinking water supplies identified in the area surrounding each facility.

D. Milk

1. Initial sampling and monitoring will be conducted at the dairies located within the plume exposure pathway EPZ of each facility with additional samples to be taken at distances extending to the boundary of the ingestion exposure pathway EPZ as the conditions of the accident warrant. The LDEQ will coordinate with the Department of Health and Hospital Sanitarians, as needed, for assistance in obtaining milk samples for analysis.

2. After the release has been stopped, LDEQ personnel will collect 1-gallon raw milk samples. Emphasis will be placed on analyzing for radioiodines, especially I-131.

3. The minimum detectable concentration for this radionuclide is approximately 2.0 pCi/liter of sample. Follow-up samples will be analyzed at intervals to be determined by LDEQ staff.

E. Air

1. LDEQ will maintain three high-volume, portable air samplers. In addition, several portable air samplers, capable of operating from a 12-volt battery, are available.

2. These samplers will be used throughout the plume exposure pathway EPZ for particulate and iodine air sample collection. These samples will be analyzed on a portable single or dual channel analyzer equipped with NaI detectors.

3. Air samplers can also be utilized after a release has been stopped to identify resuspension issues.

F. Vegetation and Crops

In the event of a contaminating release from a fixed nuclear facility, LDEQ will expand its routine surveillance program for vegetation and crops to include samples from throughout the ingestion exposure pathway EPZ as needed. Laboratory analysis of these samples will be conducted placing special emphasis on the I-131 concentrations.

TAB 5 TO CHAPTER 6

American Radiation Services International (ARS)

I. Introduction

The Louisiana Department of Environmental Quality (LDEQ) has contracted laboratory services through American Radiological Services International (ARS) for processing routine samples taken in the plume exposure pathway (EPZ) and ingestion pathway of each fixed nuclear facility affecting the State. In the event of an emergency the contract lab will provide sample analysis to support the accident assessment activities conducted by LDEQ.

ARS is a certified government contractor and is located at 2609 North River Road, Port Allen, LA.

II. Sample Collection Procedures

ARS receives and processes radiological according to their procedures. These procedures are listed as follows:

A. ARS-062 Sample Receiving

B. ARS-001 Lab QA Manual

C. HSE-001 ARS Safety Manual

D. HSE-005 Waste Handling

E. HSE-003 Respiratory Procedure

F. RSP-001 Laboratory Radiation Safety Plan

III. List of Counting Equipment

A. Low Background alpha/beta Counter

B. Tennelec LB4100W

C. Canberra/Tennelec LB4100 (quantity 2)

D. Tennelec LB5100

E. Beta Liquid Scintillation Counter – Packard Instruments (quantity 2)

F. Solid State Photon Detector

G. EG&G Ortec Gamma X (GMX) 50220-P 50% N-type (quantity 2)

H. EG&G Ortec GMX 45220-P 45% N-type

I. EG&G Ortec GMX 50 45%

J. EG&G Ortec GMX 50-P4-83 N-type

K. EG&G Ortec GMX 50-P4 N-type

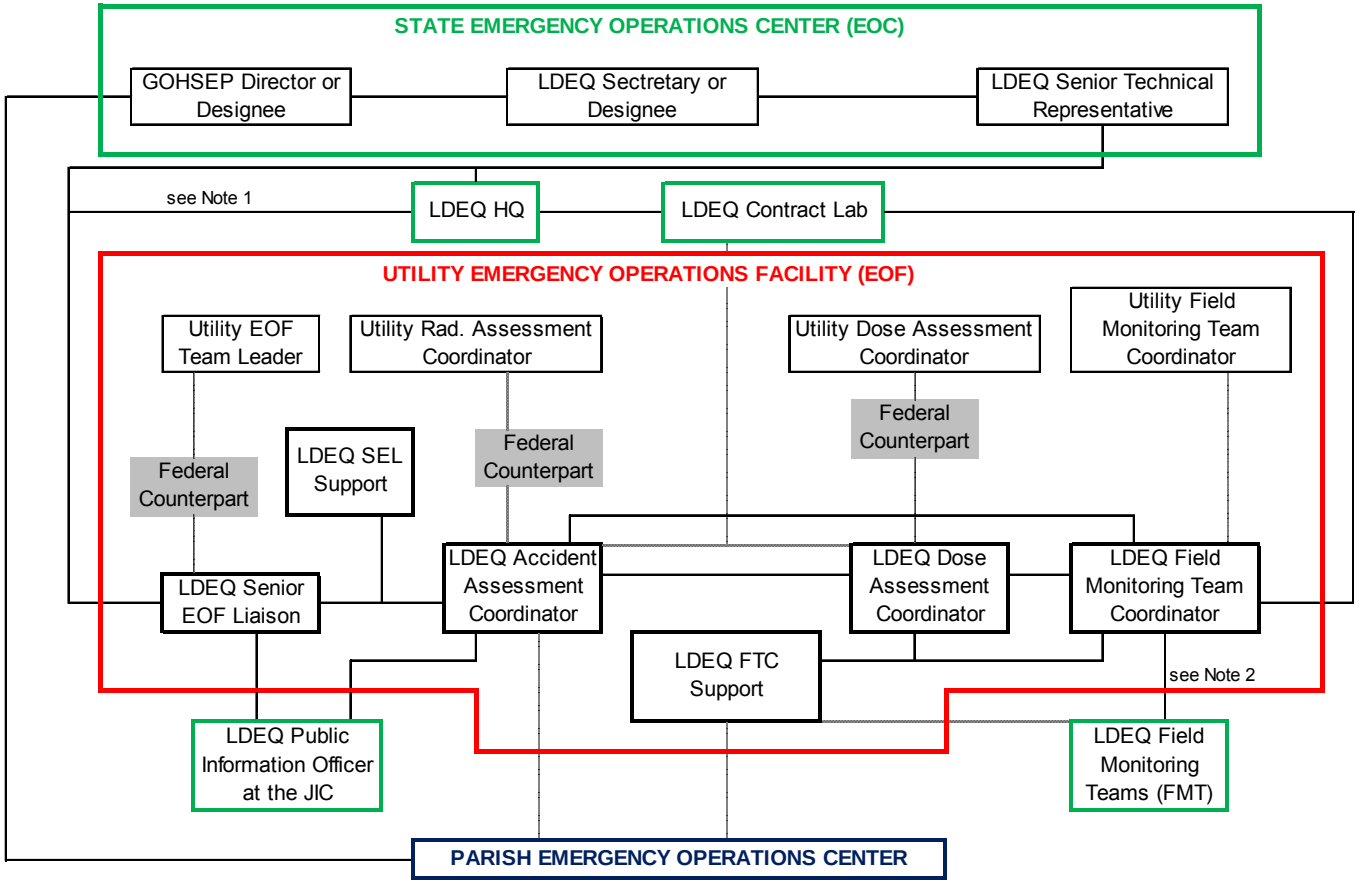
L. Alpha Spectroscopy System – EG&G Ortec PC Model, 8-Chamber (quantity 3)

M. Radon Flask Scintillation Detector – Ludlum Model 182 (quantity 6)

TAB 6 TO CHAPTER 6

Radiological Emergency Response Organizational Chart

NUCLEAR POWER PLANT EMERGENCY RESPONSE PERSONNEL ORGANIZATIONAL CHART



Note 1: Coordination with the Utility is from LDEQ HQ until LDEQ Team is operational at the EOF.

Note 2: FMTs are controlled from LDEQ HQ or the EOF, and are initially dispatched to pre-designated or assigned staging locations

Direct Relationship

Coordinating Relationship

CHAPTER 7

Protective Response for the Plume Exposure Pathway EPZ

I. Purpose

To establish those actions, methods and procedures, which constitute the State of Louisiana's protective response, in the event of an accident at a fixed nuclear facility affecting the State. These actions, methods and procedures are specific for response within the fixed nuclear facility's plume exposure pathway EPZ.

II. Situation

A. A plume exposure pathway EPZ has been established around each fixed nuclear facility affecting Louisiana. Each EPZ extends to a radius of about 10 miles from the reactor site. For planning purposes, the EPZ has been divided into protective action sections. These sections of the EPZ will provide State and Parish officials with options for recommending and implementing protective actions appropriate to the situation and circumstances at the time of an accident.

B. The principal sources of radiological exposure within the plume exposure pathway EPZ are whole body gamma radiation from the plume and from deposited radioactive material and the inhalation of radioisotopes from the plume.

C. The State of Louisiana has established a set of actions designed to protect persons living, working, traveling, or confined to institutions within the plume exposure pathway EPZ of each fixed nuclear facility. In addition, procedures have been established for the protection of emergency workers operating within the EPZ at the time of an accident.

D. Primarily, the U.S. Environmental Protection Agency's Protective Action Guides (PAG), referenced in Chapter 6, Accident Assessment, will be used to support the formulation and subsequent implementation of the State's protective response. The State and affected Parishes will implement those actions that, in the judgment of responsible officials, are appropriate to the situation and circumstances.

E. Each risk Parish will evaluate the State-level protective action recommendation and, in coordination with other risk Parishes, LDEQ and GOHSEP, will implement those actions necessary to protect public health, safety and welfare.

III. Concept of Operations

A. LDEQ Technical Assessment Team (may be referred to as EOF Team, Headquarters Team or On-Scene Technical Response Team) will forward

any protective action recommendations (PAR) developed based on accident assessment (which include dose calculations, field measurements, facility information, and other data as available) to the LDEQ Secretary or designee for review and approval. For more information on protective action recommendation development, see LDEQ Radiological Emergency Response Operating Procedure 9 (OP-9) Accident Assessment Coordinator and LDEQ Radiological Emergency Response Operating Procedure 10 (OP-10) Senior EOF Liaison.

B. The LDEQ Secretary or designee will finalize the protective action recommendations (PAR) taking into account any operational considerations in consultation with GOHSEP and/or other agencies as appropriate.

1. Specific actions for the protection of the general public may include, but are not limited to:

   a. Sheltering

   b. Respiratory protection

   c. Access control

   d. Evacuation

   e. Monitor and Prepare

2. Specific actions for the protection of emergency workers may include, but are not limited to:

   a. The administration of the thyroid protective drug Potassium Iodide (KI) (see Tab 1 to Chapter 9).

   b. Respiratory protection

   c. Limitation to duration of exposure

3. Specific actions for the protection of institutionalized persons may include, but are not limited to:

   a. Sheltering

   b. The administration of the thyroid protective drug Potassium Iodide (KI), (see Tab 1 to Chapter 9).

   c. Respiratory protection

   d. Evacuation

C. Once Protective Action Recommendations (PARs) are finalized by LDEQ in coordination with the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), LDEQ will coordinate with GOHSEP to assure that these PARs are disseminated to the affected Parishes, and other jurisdictions, as appropriate, with a sense of urgency without undue delay. This process will generally take place at the State Emergency Operations Center (State EOC).

Note: In the event, the State EOC is not activated or operational, or coordination cannot be conducted with the Director or designee of the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) – upon the decision of the LDEQ Secretary or designee on the protective action recommendations, LDEQ Secretary or designee will exercise every effort to disseminate PARs to the affected Parishes and other jurisdictions, as appropriate, with a sense of urgency without undue delay.

1. Each risk Parish will use the PAR as a basis to finalize its protective action decisions (PAD) for implementation based on local conditions, and report its decision to the State.

2. Each risk Parish will coordinate with GOHSEP the operational elements for implementation of the protective measures.

D. At the designated time each risk Parish will activate its Alert/Notification System and advise the State of this decision in accordance with established procedures.

E. In the event that a utility evacuation is ordered, the State will provide the resources requested by the parishes to assist in the evacuation of RBS and W-3. The State will not assist with the evacuation of GGNS in Mississippi.

F. In the event that a public evacuation is recommended, specific prearranged procedures will be implemented.

1. Primary evacuation routes have been identified for each protective action section. Traffic control points will be manned along these routes in accordance with provisions found in Attachments to this Plan.

2. Parishes designated to support risk Parishes will be notified primarily by the requesting parish and will implement their operating procedures. Parishes may request assistance from other parishes with no prior mutual agreement using the Intrastate Mutual Aid Compact.

3. Procedures for dealing with potential impediments along primary evacuation routes will be implemented essentially according to Parish Enclosures to this plan.

4. The principal means of transportation in the event of an evacuation is the private automobile augmented by bus transportation. Specific arrangements have been made for the transportation of institutionalized persons and school children.

G. Relaxation of protective actions and recovery

1. State-level recommendations for the relaxation of protective actions and the initiation of recovery activities will be prepared primarily by

LDEQ based upon plant conditions and ambient levels of radiation compared to Protective Action Guides.

2. LDEQ consequence assessment (which includes field monitoring and sampling, laboratory analyses and dose assessment) activities will continue, in coordination with appropriate Federal and State agencies, and other States, as necessary, until no further threat to public health exists.

3. LDEQ Secretary or designee will finalize recommendations on recovery activities and immediately communicate these to GOHSEP. GOHSEP, in turn, will communicate those recommendations to all risk Parishes.

4. Support Parishes and ingestion pathway EPZ Parishes and State agencies will be advised by GOHSEP of the recovery recommendation.

IV. Protective Response Options

A. At the time of an accident at a fixed nuclear facility, the protective response of the State and risk Parishes will consist of several options. An individual protective action may be recommended for areas within the plume exposure pathway EPZ or a combination of actions may be recommended depending on the accident assessment and the situation. The protective action options available include:

1. <u>Sheltering</u>

   a. Sheltering, also known as sheltering in place or SIP, is an action that may be recommended at the emergency classification level (ECL) of Site Area Emergency or General Emergency.

   b. When this action is recommended, the public will be advised to seek shelter in a permanent, reasonably airtight structure, such as a house, commercial building or office building. The public will be instructed to close doors and windows and to reduce outside air intake from heating or cooling systems if those systems take in outside air.

   c. Persons traveling by motor vehicle in the protective action section will be advised to close windows and vents to stop or reduce intake of outside air, or to turn off heating or cooling systems, if and as necessary.

2. <u>Respiratory protection</u>

   a. Respiratory protection is an action that is used in conjunction with sheltering and may be recommended at the emergency classification level (ECL) of Site Area Emergency or General Emergency.

b. When respiratory protection is recommended, people within the risk area will be advised to cover their noses and mouths with handkerchiefs, cloth, or other protective materials, while outside of their homes. People in these risk areas, if advised to take a sheltering posture, would be asked to close doors and windows, and otherwise limit outside air intake from heating or cooling systems.

3. Access control

a. Access control is a protective action used to prevent undue radiological exposure to members of the public entering a protective action section. Access control may be used as a separate action or in conjunction with other actions such as evacuation or sheltering, and may be used at either the Site Area Emergency or General Emergency.

b. When access control is implemented, access to the protective action section is restricted, thus limiting the possible exposure that an individual might receive by entering that section. Access control is a responsibility of the risk Parish law enforcement office, which will be augmented as necessary by the Louisiana State Police.

c. Plans have been established to implement access control procedures for the entire plume exposure pathway EPZ surrounding each facility as well as for the defined portions of each protective action section (PAS).

d. Plans and procedures for implementing access control are detailed in the Attachments to this plan. For more details on traffic and access control, refer to the individual parish's Sheriff's Department Emergency Response Procedure.

4. Evacuation

a. Evacuation is a protective action that may be recommended to the resident and transient population at the emergency classification level (ECL) of Site Area Emergency or General Emergency. When an evacuation is recommended for a protective action section (PAS), all members of the public will be advised to leave that protective action section (PAS) until it has been determined that it is safe to return.

b. Persons affected by an evacuation recommendation who are without transportation will be assisted in accordance with the Attachments to this Plan.

c. Evacuated persons needing accommodations outside of the protective action section (PAS) will be provided with food,

shelter, sanitary facilities and medical care at shelter facilities as provided for in the Attachments.

5. Monitor and Prepare
   a. Monitor and Prepare is a protective action that may be recommended to advice the public within the EPZ that a serious emergency at the nuclear power plant exists and that it should monitor the situation and prepare for the possibility of evacuation, Shelter-in-Place, or other protective actions.
6. Potassium Iodide (KI)
   a. Potassium Iodide is a substance that tends to saturate the thyroid gland, thus reducing the uptake of radioiodines that could be a hazard during an accident (see Tab 1 to Chapter 9).
   b. During an accident at a fixed nuclear facility, the State of Louisiana will consider recommending the use of thyroid protective drug Potassium Iodide (KI) within the affected area for emergency workers, and also for institutionalized persons who are unable to evacuate quickly.
   c. Attending physicians at medical or nursing facilities must approve administration of Potassium Iodide for their patients. (See Chapter 9, Radiological Exposure Control)
7. Limitation to duration of exposure

   When radiation exposure levels approach protective action guides for the general population (1 Rem whole body TEDE dose or 5 Rem CDE to the thyroid), exposure limits will be assigned to emergency workers following the EPA guidance provided in Section B-2 of this chapter (see also Chapter 9, Radiological Exposure Control), unless otherwise decided.

B. The U.S. EPA PAGs (Tab 1 to Chapter 6) provide numerical criteria based on projected dose from which predetermined actions may be taken at the time of an accident at a fixed nuclear facility.

These criteria are not flexible limits nor are they “safe” levels below which no protective action are indicated. Rather, they will be used to minimize risk from an accident which is occurring or which has occurred.

The protective actions described are intended to be flexible and are only considered to be general guidelines.

The following actions will be considered during or following an accident for the general public, emergency workers, institutionalized persons and school children.

1. General Public

a. Whole body projected dose (Total Effective Dose Equivalent (TEDE)) of less than 1 Rem, or thyroid projected dose (Committed Dose Equivalent (CDE)) of less than 5 Rem:

i. No immediate action is warranted, but may be considered on a case-by-case basis.

ii. A shelter-in-place recommendation may be considered.

iii. Radiation levels will be monitored.

b. Whole body projected dose (TEDE) of 1 Rem or above, or thyroid projected dose (CDE) of 5 Rem or above:

i. Evacuations will be recommended for areas where the above limits are exceeded.

ii. If a General Emergency (GE) classification is declared by the plant, then, unless otherwise decided, the following protective actions will be recommended as a minimum:

1) Evacuate areas within a <u>two-mile Radius</u> around the plant and <u>five miles downwind</u> from the plant,

2) Monitor and prepare areas within the remaining plume exposure pathway EPZ.

3) Shelter-in-place will be recommended, if appropriate.

4) Evacuation will be considered and may be recommended for any area in the plume exposure pathway EPZ, if deemed necessary, based on technical assessment of plant conditions or other pertinent information.

5) Access control will be implemented for areas identified to be at risk.

2. <u>Emergency Workers</u>

a. Thyroid projected dose (CDE) of 5 to less than 25 Rem:

i. Consider the use of Potassium Iodide (KI) and administer if warranted (see Tab 1 to Chapter 9).

ii. Implement respiratory and other protective measures if any is needed.

iii. Duration of exposure limitations for emergency workers in risk areas may be implemented.

b. Thyroid projected dose (CDE) of 25 Rem or greater:

i. Administer Potassium Iodide (KI) (see Tab 1 to Chapter 9).

ii. Implement respiratory and other protective measures if any is needed.

iii. Implement duration of exposure limitations for emergency workers in risk areas.

c. Whole body projected dose (TEDE) greater than 5 Rem but less than 25 Rem:

NOTE: Thyroid projected dose (CDE) may not be a limiting factor for missions involving protection of valuable property.

Emergency worker dose levels between 5 Rem TEDE and 10 Rem TEDE will be considered for:

i. Missions to protect valuable properties when lower dose is not practicable; between 10 Rem and 25 Rem.

ii. Missions for lifesaving activities or protection of large populations.

1) These missions will be undertaken only with the authorization of the principal elected official of the involved jurisdiction, desirably in consultation with LDEQ.

2) Missions will be on a voluntary basis by persons fully aware of the risks involved.

iii. At these dose levels, duration of exposure limitations used in conjunction with other exposure control measures may prove to be the most effective means to protect workers on the aforementioned missions.

d. Whole body projected dose (TEDE) greater than 25 Rem:

NOTE: Thyroid projected dose (CDE) may not be a limiting factor for lifesaving missions or missions involving protection of large populations.

i. Emergency worker dose levels from these limits will be considered on missions for lifesaving activities or protection of large populations.

1) These missions will be undertaken only with the authorization of the principal elected official of the involved jurisdiction, desirably in consultation with LDEQ.

2) Missions will be on a voluntary basis by persons fully aware of the risks involved.

ii. At these dose levels, duration of exposure limitations used in conjunction with other exposure control measures may prove to be the most effective means to protect workers on lifesaving missions.

3. Institutionalized Persons

NOTE: Persons considered in this category include those individuals residing in nursing homes or confined to hospitals or penal institutions.

a. The LDEQ Secretary or designee shall seek the advice of the State Health Officer at the time of an accident to discuss medical factors, since attending physicians at medical or nursing facilities must approve administration of Potassium Iodide for their patients.

i. Whole body projected dose (TEDE) of less than 1 Rem, or thyroid projected dose (CDE) of less than 5 Rem:

1) No immediate action is warranted, but may be considered on a case-by-case basis.

2) Shelter-in-place will be considered along with respiratory protection and the use of the thyroid protective drug Potassium Iodide (KI) (see Tab 1 to Chapter 9).

ii. Whole body projected dose (TEDE) of 1 Rem to less than 5 Rem, or thyroid projected dose (CDE) of 5 Rem to less than 25 Rem:

1) Shelter-in-place will be recommended as a minimum along with respiratory protection, if available.

2) Evacuation will be considered for ambulatory persons if time permits, and other conditions are favorable.

3) Use of the thyroid protective drug Potassium Iodide (KI) will be considered (see Tab 1 to Chapter 9).

iii. Whole body projected dose (TEDE) of 5 Rem and above, or thyroid projected dose (CDE) of 25 Rem and above:

1) Evacuation will be recommended.

a) NOTE: Hospital and nursing home patients aged 45 years or older, or those persons considered too critical for transport, should be considered candidates for shelter-in-place rather than evacuation.

2) Shelter-in-place, respiratory protection or the use of the thyroid protective drug Potassium Iodide (KI) may be recommended as alternatives to evacuation (see Tab 1 to Chapter 9).

4. School Children

NOTE: These protective action considerations will apply during school hours when school is in session.

a. At the time of an accident when PAGs are projected to be exceeded, several options may be considered.

i. Early Evacuation:

1) If the local plan calls for an evacuation of the general public at the "General Emergency" level, then protective actions for school children would be initiated at the "Site Area Emergency" level.

2) In the event of a rapidly deteriorating situation, school children would be evacuated simultaneously with the general public.

ii. Early Dismissal:

1) Early dismissal may be used because of the uncertainty of the radioactive plume's pathway.

2) The radioactive plume may make both the school and home undesirable shelters.

iii. Evacuation Combined with Early Dismissal:

1) The school children who reside in a sector of the plume exposure pathway EPZ not affected by the potential danger, or outside the plume exposure pathway EPZ could be dismissed early to their parents or other supervision

2) Students whose homes are potentially in the path of a radioactive plume would be evacuated to designated relocation centers.

iv. Shelter-in-place:

1) Shelter-in-place may be used as a primary or temporary protective action depending upon the characteristics of the radiological release and the status of weather and road conditions.

2) Consideration will be given to providing the above mentioned increased levels of protection to school children when time and circumstances permit; otherwise, school children will be considered for the same protective actions as members of the general public.

V. Tabs

Tab 1 Technical Basis for Making Protective Action Recommendations

TAB 1 TO CHAPTER 7

Technical Basis for Making Protective Action Recommendations

I. Introduction

The question of whether to recommend sheltering or evacuation as a protective action in a given situation during an accident at a fixed nuclear facility has been explored in several technical studies produced for the Federal government. These studies include: "Public Protection Strategies for Potential Nuclear Accidents - Sheltering Concepts with Existing Public and Private Structures," Sandia Laboratory, 1977; "Examination of Off-Site Radiological Emergency Measures for Nuclear Reactor Accidents Involving Core Melt," Sandia Laboratory, 1978; "Protective Action Evaluation Parts I and II, Evacuation and Sheltering as Protective Actions Against Nuclear Accidents Involving Gaseous Releases," U.S. Environmental Protection Agency, April 1978; U.S. EPA "400-R-92-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" .

In addition to the guidance found in the "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Guidance for Protective Action Strategies", NUREG-0654 FEMA-REP-1, Rev. 1, Supplement 3, 2011the State of Louisiana will use the information found in these reports as input to the decision to recommend evacuation, monitor and prepare, or Shelter-In-Place should the circumstances of an accident require such measures.

II. Representative Dose Reduction Factors for External Radiation*

Structure	Dose Reduction Factor†
Outside	1.0
Vehicles	1.0
Wood frame house, no basement‡	0.9
Masonry house, no basement	0.6
Basement of wood house	0.6

* EPA-400-R-92-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, Table C-6

† Ratio of the interior dose to the exterior dose

‡ A wood frame house with brick or stone veneer is approximately equivalent to a masonry house for shielding purposes.

Basement of masonry house*	0.4
Large office or industrial building	0.2

III. Representative Reduction Factors for Surface Source†

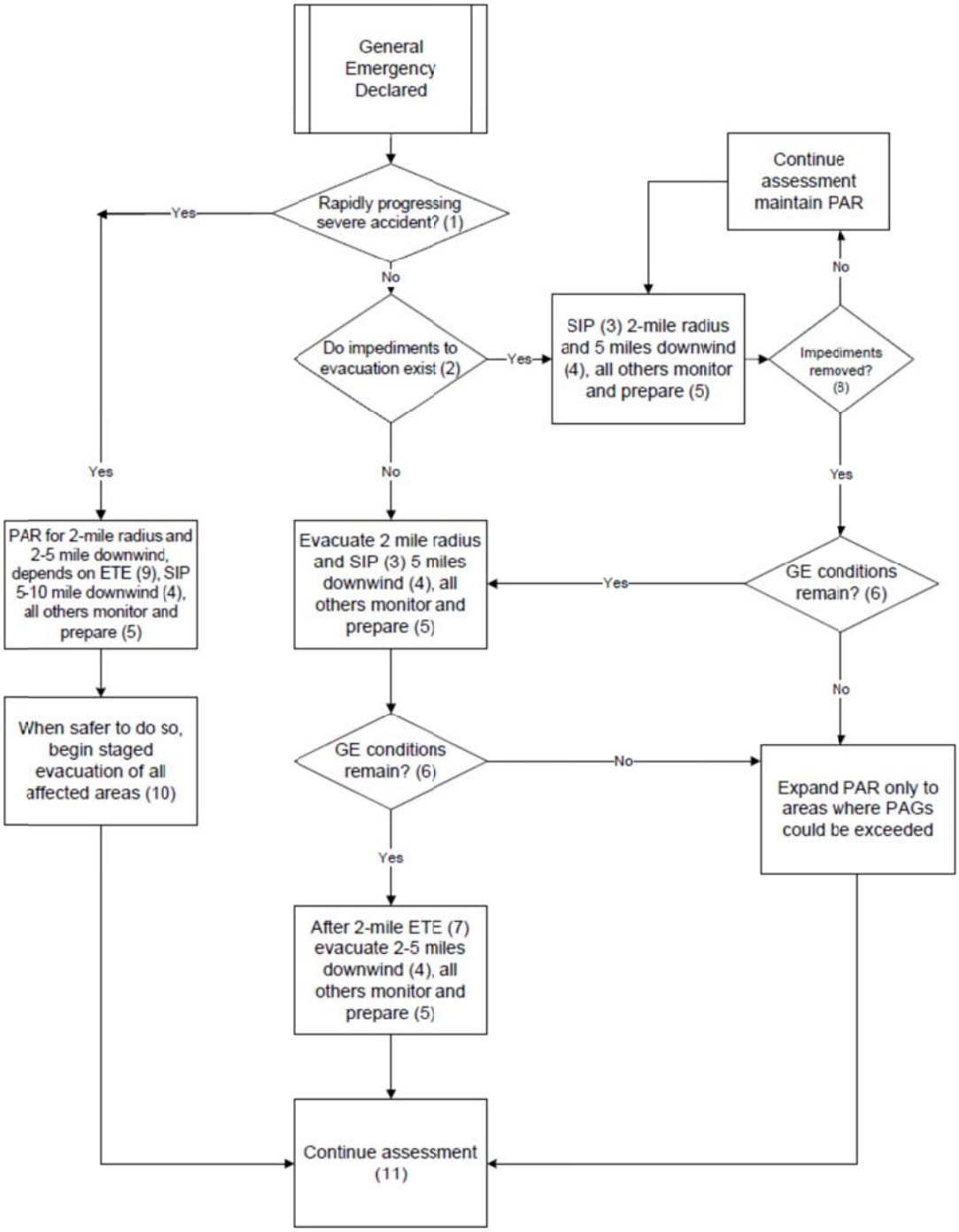
Structure and/or Location	Reduction Factors
1m above a hypothetical, infinite, smooth plane	1.00
1m above ordinary ground	0.70
1m above center of 50 ft. roadway half contaminated	0.55
Cars, pickups, buses, and trucks on 50-ft. road: Road fully contaminated Road fully decontaminated	 0.5 0.25
Trains	0.4
1- and 2-story wood frame homes (no basement)	0.4
1- and 2-story block/brick homes (no basement)	0.2[6]
3- or 4-story structures, 5,000 to 10,000 ft.^{2} per floor: First and second floors Basement	 0.05‡ 0.01[6]
Multi-story structures, 10,000 ft.^{2} per floor: Upper floors Basement	 0.01[6] 0.005[6]

* "Protective Action Evaluation Part I - Effectiveness of Sheltering as a Protective Action Against Nuclear Accidents Involving Gaseous Releases," U.S. EPA, April 1978

† US NRC, "Reactor Safety Study: An Assessment of Accident Risks in US Commercial Nuclear Power Plants," WASH-1400 (NUREG-75/014), October 1975, Appendix VI

‡ Away from doors and windows.

VI. Protective action strategy development tool



Protective action strategy development tool

PROTECTIVE ACTION STRATEGY DEVELOPMENT TOOL NOTES

It is not intended that licensees or offsite response organizations (OROs) have protective action implementing procedures that are exactly the same as provided here. Licensees for each nuclear power plant should develop site-specific strategies and decision tools/procedures for the site using the guidance provided below in collaboration with OROs responsible for protective action decision making.

The information in these notes that should be considered in developing the strategy is labeled as "Note." Background information is labeled as "Background Note" and is meant to be helpful in development efforts.

Note 1: Rapidly Progressing Severe Incident

A rapidly progressing severe incident is a General Emergency (GE) with rapid loss of containment integrity (emergency action levels indicate containment barrier loss) and loss of ability to cool the core. This path is used for scenarios in which containment integrity can be determined as bypassed or immediately lost during a GE with core damage. If this scenario cannot be immediately confirmed, assume it is not taking place and answer "no" to this decision block.

Note 2: Impediments to Evacuation

Impediments to evacuation include the following:

- Evacuation support (e.g., traffic control) is not yet in place. In this situation, the GE is the initial notification, or if a previous notification was made, the GE notification occurs before preparations to support an evacuation are complete. Many sites have a low population density within 2 miles, and lack of traffic control may not be considered an impediment. The licensee and OROs should discuss this element and reach an agreement. The licensee and OROs should agree, in advance, on an expected time for evacuation support to be put in place after notification of an emergency classification. The site-specific protective action recommendation (PAR) procedure for those sites at which a delay of an initial staged evacuation is necessary, pending support setup, should include this time. The licensee would base procedures on the agreement and would not confer with OROs before making the initial PAR notification.

- In a hostile-action-based GE (armed attack), OROs may determine that an initial recommendation to shelter in place (SIP) rather than evacuation is the preferred path. The licensee would discuss this element with OROs and reach an agreement during the development process. The licensee would base procedures on the agreement and would not confer with OROs before making the initial PAR notification.

- In the event of adverse weather, licensees are not responsible for soliciting information or for making a determination that weather or other impediments (e.g., an earthquake or wildfire) for safe public evacuation exist at the time of the emergency. However, the licensee will consider an impediment to exist if OROs have previously notified it of such an impediment (e.g., roadways are closed because of deep snow). During the planning process, OROs may determine that the licensee does not need to consider adverse weather in its plant PAR procedures.

Note 3: Shelter in Place

SIP means that instructions are given to members of the public to remain indoors, turn off heating or air conditioning (as appropriate for the region and season), close windows, monitor communications channels, and prepare to evacuate. The instructions should specify that SIP is safer than evacuation at this time, or that, alternatively, SIP is being implemented in order to keep roadways clear to allow others to evacuate rapidly. The intent of SIP is for members of the public to remain where they currently are or to seek shelter close by, but they should not return home to shelter when more immediate options for sheltering are available.

Note 4: Downwind Sectors

Downwind sectors include a downwind 22.5-degree compass sector(s) and adjacent sectors. Generally, the downwind sectors involve three or four sectors and include all the emergency response planning areas impacted in that area.

Background Note: Wind Persistence

Site-specific wind persistence information may indicate the need to include additional sectors with the initial recommendation. However, the licensee should discuss this element with responsible OROs to determine whether expanded initial protective actions are appropriate or desirable. The size of emergency response planning areas may determine whether there is a site-specific need for this contingency.

Note 5: Monitor and Prepare

The instruction to monitor and prepare is intended to engage the population within the plume exposure pathway emergency planning zone, inform them of the emergency, and advise them that they should monitor the situation and prepare for the possibility of evacuation, SIP, or other protective actions. If an evacuation is underway, officials should ask members of the public who are not directed to evacuate to remain off the roadways to allow the evacuation to proceed.

Background Note: Emergency Messaging

Effective emergency messaging requires clear and frequent communications with the public. If the public is not engaged (i.e., given instructions of some kind), a larger shadow evacuation could result. A large shadow evacuation could impede those closest to the plant and increase public exposure. Frequent communication may also reduce public inquiries to OROs for status and instructions.

Note 6: Consideration of Plant Conditions before the Evacuation of Downwind Sectors

If the plant has mitigated the conditions that caused the GE declaration (i.e., core cooling is restored), expanding the PAR to evacuate downwind sectors upon completion of the initial staged evacuation may not be necessary. However, if GE emergency action levels are still met, expansion of the PAR to the downwind sectors may be appropriate. If the plant restores core cooling, it must still perform a radiological assessment to identify the extent of contamination, if any. If surveys or dose projections reveal areas under no protective action direction where protective action guidelines (PAGs) could be exceeded, the members of the public in those areas should be evacuated or sheltered, as appropriate.

Note 7: Timing for Evacuation of Downwind Sectors

Implementation of this element should occur at the time of the site-specific 2-mile evacuation time estimate (ETE) for 90-percent evacuation (e.g., *T* hours (use site-specific time) after OROs were notified of the initial PAR to evacuate downwind sectors).

Background Note: *T* Values

The licensee will identify the value of *T* using the site-specific ETE and should consider T_D for a daytime ETE and T_N for a nighttime ETE. These values should be representative for the site and should not include special events (e.g., temporary offsite activities that draw into the emergency planning zone transient, nonresident individuals who may be present during an emergency). However, OROs should consider the effects of special events. If the shift staff is responsible for making this PAR, it should do so without conferring with OROs and in accordance with procedures, based on the ETE value alone. The verification of the evacuation progress is not expected. However, if the augmenting emergency response organization (ERO) has been activated, sufficient resources may be available for the licensee to confer with OROs more fully before expanding the PAR to downwind sectors.

Note 8: Removal of Evacuation Impediments

Removal of evacuation impediments involves the following:

- Evacuation Support. If the OROs identified this contingency as necessary during the planning effort, the licensee should notify OROs with an evacuation PAR when the agreed upon time (e.g., 1 hour from the GE notification) has elapsed. The licensee shift staff is not expected to confer with OROs before changing the PAR, but if the augmenting ERO is activated they may do so.

- Hostile Action (Armed Attack). OROs may identify this contingency as necessary during the planning effort. It may be appropriate to set up a timeframe for the licensee to notify OROs with an evacuation PAR. The licensee shift staff is not expected to confer with OROs before changing the PAR, but if the augmenting ERO is activated they may do so.

- Adverse Weather. If weather or some other roadway disruption caused the impediment, OROs will determine when it is appropriate to change the protective action. Licensees have no responsibility for PAR modification unless a PAR change is necessary because of plant conditions or radiological assessment. OROs determine when it is safe for the public to evacuate.

Note 9: SIP versus Evacuation PAR for Rapidly Progressing Scenarios

The licensee should issue an evacuation PAR in scenarios for which the time to evacuate 90 percent of the population within a 2-mile radius is 2 hours or less. If the ETE is longer, the licensee should recommend SIP. The licensee should consider T_D for a daytime ETE and T_N for a nighttime ETE.

The licensee should issue an evacuation PAR in scenarios for which the 2- to 5-mile downwind sector evacuation time for 90-percent completion is 3 hours or less. If the ETE is longer, the licensee should recommend SIP.

For all cases, the licensee should recommend SIP for the 5- to 10-mile downwind sectors.

To the extent practical and recognizing the urgency of the incident, impediments may be considered. The existence of impediments could change the most effective PAR from evacuation to SIP.

Background Note: Rapidly Progressing Scenario

The ETE values should be representative for the site and should not include special events.

The rapidly progressing incident is more severe than other GEs, and different protective actions are appropriate for all sites.

Extreme weather conditions, such as inversion, significant precipitation, or no wind, can change the efficacy of SIP and make evacuation the preferred protective action.

Licensees may perform an analysis to determine site-specific ETE criteria instead of using this generic guidance.

Note 10: Evacuation Timing for Rapidly Progressing Scenarios

Evacuation after the SIP period is critical for reducing public exposure. Licensees should discuss the evacuation of the sheltered population with OROs.

Background Note: Evacuation Timing for Rapidly Progressing Scenarios

The evacuation should proceed from the areas that are most at risk. The evacuation may involve a 2-mile radius unless field monitoring data show otherwise (e.g., at a site with an elevated release point where contamination may begin beyond 2 miles). Lateral evacuation (e.g., travel perpendicular to the direction of the plume) may be considered where the roadway network is conducive, as it may reduce public exposure. However, preplanning for lateral evacuation is not expected. In any case, the determination of evacuation routes and timing should be based on release information, field monitoring data, and ORO resources.

Note 11: Continue Assessments

Radiological and meteorological assessments should be continued and evacuation considered for any areas where dose projections or field measurements indicate that PAGs may be exceeded.

Background Note: Continue Assessments

Communications with the public should be maintained while protective actions are in effect.

CHAPTER 8

Protective Response for the Ingestion Exposure Pathway EPZ

I. Purpose

To establish those actions, methods and procedures which constitute the State of Louisiana's protective response to an accident for the ingestion exposure pathway EPZ of each fixed nuclear facility affecting the State.

II. Situation

A. A fixed nuclear facility accident may impact the population through the ingestion of contaminated milk, food, and water. This impact may be geographically far-reaching and may continue for a period of time ranging from hours to months after the accident.

B. An ingestion exposure pathway EPZ has been established for each facility affecting Louisiana. This EPZ begins at the reactor site and extends to a radius of 50 miles.

C. The principal sources of radiological exposure in the ingestion exposure pathway EPZ are deposited, dissolved or suspended radionuclides and particulate matter that can be ingested through the consumption of contaminated food, water, or milk.

D. Protective action taken to protect persons from radiological contamination through this exposure pathway may range from sheltering animals or preventing their consumption of affected feeds and water to the condemnation or control of agricultural products intended for human consumption and possible removal and disposal of soil.

III. Concept of Operations

A. In the event of a fixed nuclear facility accident with off-site consequences, LDEQ will coordinate sampling and monitoring activities in the ingestion exposure pathway EPZ (See Chapter 6, Accident Assessment).

B. LDEQ Technical Assessment Team will make protective action recommendations for the ingestion exposure pathway EPZ to the LDEQ Secretary or designee.

C. The LDEQ Secretary or designee will finalize the protective action recommendations (PAR) taking into account other considerations surrounding the accident. LDEQ Secretary or designee will communicate these PARs to Commissioner of the Louisiana Department of Agriculture and Forestry (LDAF) and the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) with a sense of urgency without

undue delay. Based on LDEQ's PAR, the Commissioner of the LDAF will make the Protective Action Decision (PAD).

D. When the PAD is made by the Commissioner of LDAF, PIO of LDAF may produce press release to communicate the decision. GOHSEP will notify Parishes, other jurisdictions as necessary and other States within the ingestion exposure pathway EPZ of the protective action recommendation. GOHSEP may also activate the EAS to notify the agricultural community of information on the protection of livestock and crops during an accident.

E. The Louisiana Department of Agriculture and Forestry's Emergency Coordinator/Incident Commander will serve as the liaison between the State response organizations and the U.S. Department of Agriculture (USDA). Also through LDAF Emergency Coordinator/Incident Commander, information regarding agribusiness information can be obtained by request.

The USDA State representative serves as chairman of the Louisiana Agricultural Emergency Board and will coordinate the response of USDA agencies which are member agencies of the Agricultural Emergency Board.

1. The Farm Services Administration maintains an updated list of agricultural producers, processors and wholesalers throughout the State for use in the event that food products need to be identified for control or condemnation.

2. The County extension agencies will provide direct information and assistance as required and requested to the agricultural community.

F. The Louisiana Department of Agriculture and Forestry will assist GOHSEP in developing statewide emergency information for the agricultural community. The Louisiana State University (LSU) Cooperative Extension Service will support in this effort and assist with the distribution.

G. In the event that the control or condemnation of agricultural products is required, the Department of Health and Hospitals will provide advice and guidance for the diversion or destruction of radiologically contaminated food, crops and milk, originating in the ingestion exposure pathway EPZ. The Department of Health and Hospitals will also provide advice and guidance for water treatment facilities within the affected area of any appropriate protective action. State-level recommendations for the relaxation of protective actions and the initiation of recovery activities will be based upon plant conditions and ambient levels of radioactivity compared to Protective Action Guides. LDEQ monitoring, sampling, and dose assessment activities will continue until no further threat to public health exists.

H. LDEQ, through coordination with GOHSEP and/or other agencies, as appropriate, will communicate a recovery recommendation to all risk Parishes following the decision of the LDEQ Secretary or designee.

Support Parishes and ingestion pathway EPZ Parishes and State agencies will be advised by GOHSEP of the recovery recommendation.

I. LDEQ will maintain overall responsibility throughout the course of an accident for determining committed effective dose equivalents (CEDE) to the population from potential ingestion of contaminated food and water. LDEQ will also perform estimates to determine the CEDE consequences of ingestion if no protective actions are taken.

IV. Protective Action Options for Reducing Radiological Exposure from the Consumption of Foodstuffs, Water, or Milk

A. Control of contaminated food will be accomplished at the State level. However, should food in interstate commerce become involved, the Food and Drug Administration will be responsible for control.

B. Criteria have been established as a basis for the recommendation of protective actions. These criteria constitute flexible guidance and are intended not to restrict protective actions on the basis of dose commitments. More conservative actions may be desirable based on the circumstances surrounding an accident.

C. The U.S. FDA is the responsible Federal agency for developing criteria relating to the acceptability of food for human consumption. LDEQ will use the guidance offered by the FDA as established in "Accidental Radioactive Contamination of Human Food and Animal Feeds - Recommendations for State and Local Agencies," August 13, 1998.

D. Protective Actions will be determined and used to minimize exposure of the public to contaminated food as follows:

1. 0.5 Rem committed effective dose equivalent (CEDE), or
2. 5 Rem committed dose equivalent (CDE) to an individual tissue or organ, whichever is more limiting.
3. Tab 2 to Chapter 8 shows the most limiting Derived Intervention Levels (DIL) of the radionuclides of interest for each age group.

E. Recommended actions for the protection of Food, Milk, and Water are based on Derived Intervention Levels (DIL).

1. A Derived Intervention Level (DIL) corresponds to the concentration in food present throughout the relevant period of time that, in the absence of any intervention could lead to an individual receiving a radiation dose equal to the PAG.
2. After one year, the DIL values should be re-evaluated by the state (kept or changed) based on sampling data collected after the incident.

3. FDA DILs provide a large margin of safety for the public because each DIL is set according to a conservatively safe scenario for the most vulnerable group of individuals. Protective action would be taken if radionuclide concentrations were to reach or exceed a DIL at any point in time, and such concentrations would need to be sustained throughout the relevant extended period of time for the radiation dose to actually reach the PAG.

4. Food with concentrations below the DIL could be recommended for entry into commerce without restriction.

5. Food with concentrations above the DIL is not normally permitted to move in commerce.

6. In either situation, the state and local officials have the flexibility in whether or not to apply restriction in special circumstances, such as permitting use of food by a population group with a unique dependency on certain food types.

7. <u>Basis for Protective Action Criteria for Milk</u>

   a. Contributing Factors:

      i. The monitoring of agricultural crops following an accident is of particular importance due to the potential for the release of the radioiodine family of radioisotopes.

         1) Radioiodine is present in abundant quantities in the reactor core and is capable of significant biological impact. This is particularly true in light of their affinity for the pasture-cow-milk-man food chain.

         2) Experience has shown that the time interval from deposition on pasture to the appearance of significant quantities in cow's milk may well be as short as just a few hours or as long as several days.

         3) It is important that actions to minimize milk contamination be taken at the earliest possible time.

      ii. The protection of the fresh fluid milk supply is of importance for several reasons:

         1) Accidents not requiring protection against direct radiation exposure may still warrant consideration of the milk exposure pathway due to the effect of concentration of radioiodines in milk.

2) Accidents requiring protection of the milk supply may influence a larger area than that requiring protection against direct exposure.

3) The population at risk from milk contamination may be larger than the population at risk from direct exposure.

iii. The degree of milk contamination will depend on several parameters, some of which include:

1) Magnitude of Radioiodine Released

2) Abundance of Iodine-131 Released

3) Time of Year

4) Prevailing Weather

b. Protective Actions for Milk

i. Precautionary Action for Dairy animals in pasture:

1) Shelter and remove lactating cows from contaminated pasture and place on stored feed and covered water. EAS messages should address preventive protective actions and information regarding milk-producing animals.

2) Provide a constant source of uncontaminated water.

ii. Milk and Milk Products

1) Withhold contaminated milk from the market to allow radioactive decay of short-lived radionuclides. This may be achieved through storage of frozen fresh milk, frozen concentrated milk, or frozen concentrated milk products.

2) Divert fluid milk for production of dry whole milk, non-fat dry milk, butter, cheese or evaporated milk.

3) Contaminated milk may be acceptable for use in animal feed in cases where the ingested radioactivity will not contribute additional radiation exposure to the human population.

4) The diversion of fresh milk-to-milk products must continue until the concentration of I-131 approaches background levels.

5) Collect milk samples and transport to lab for analysis to determine levels of radioactive contamination. Coordinate lab analysis with all appropriate locations.

iii. Protective Action at PAG level

1) The PAG establishes a point at which determination must be made and implemented concerning the isolation, condemnation or other disposal method for milk containing radioactivity.

2) Prior to taking such action, the following factors will be considered by responsible officials:

a) The feasibility of implementing other protective actions and precautionary actions, previously discussed.

b) The relative proportion of the total diet by weight constituted by the item in question.

c) The food value of the item in question and the availability of uncontaminated food or substitutes having the same nutritional properties.

d) The relative contribution of other foods and other radionuclides to the total projected dose.

e) The time and effort required to effect corrective action.

8. <u>Protection of Other Foods</u>

a. Precautionary Actions:

i. Fruits and Vegetables:

1) Washing, brushing, scrubbing, shelling or peeling to remove surface contamination.

2) Preservation by canning, freezing, and dehydration or storing to permit radioactive decay of short-lived radionuclides.

3) Removing and disposal of fruits and vegetables where radioactivity cannot be reduced to background or levels acceptable for use.

ii. Grains

1) Milling

2) Polishing

3) Storage to permit radioactive decay of short-lived radionuclides.

4) Use of contaminated grains as feed for animals in cases where ingested radioactivity will not contribute additional radiation exposure to the human population.

5) Use of contaminated grains for seed.

6) Disposal of grains in which the radioactivity cannot be reduced to levels acceptable for use.

7) Permit grains to grow to maturity and harvest.

iii. Meats and meat products will be considered on a case-by-case basis for:

1) Diversion to non-human consumption.

2) Storage to allow decay of short-lived radionuclides.

3) Disposal of meat and meat products in which the radioactivity cannot be reduced to levels acceptable for use.

4) Intake of Cs-134 and Cs-137 by any adult by way of the meat pathway may exceed that of the milk pathway. Therefore, levels of Cesium in milk approaching the protective action guide "Response level" should cause surveillance and protective action for meat, as appropriate, such as placing "meat animals" on uncontaminated stored feed and covered water.

iv. (4) Other foods and food products will also be considered on a case-by-case basis for:

1) Diversion to non-human consumption.

2) Storage to allow decay of short-lived radionuclides.

3) Disposal of foods and food products in which the radioactivity cannot be reduced to levels acceptable for use.

b. Protective Actions at PAG levels:

i. The PAG establishes a point at which determinations must be made and implemented concerning the isolation, condemnation or other disposal method for food containing radioactivity.

ii. Prior to taking such action, the following factors will be considered by responsible officials:

1) The feasibility of implementing other protective actions previously discussed.

2) The relative proportion of the total diet by weight constituted by the item in question.

3) The food value of the item in question and the availability of uncontaminated food or substitutes having the same nutritional properties.

4) The relative contribution of other foods and other radionuclides to the total projected dose.

5) The time and effort required to effect corrective action.

9. Protection of Domestic Water Supplies

a. Determine through sampling if water supplies in the area are safe for human and animal consumption. Determine priority for sampling of those supplies.

b. Collect raw water samples near the sources of contamination to establish whether or not gross contamination of raw water is evident. The ground water source should be monitored over an extended period of time to insure that it has not been affected.

c. Isolate all affected contaminated wells. All open wells, cisterns, barrels and other open water collecting containers should be covered to prevent radioactive fallout from hitting open water surfaces.

d. For storage containers which are supplied by runoff from roofs or other surface drain areas, the collecting filler pipe should be disconnected to prevent contaminants from being washed into the storage containers.

e. Radionuclides may be released directly into surface water bodies and into ground water. Lakes and stream currents can move these radionuclides many miles in a few hours and thus should be monitored and sampled frequently.

f. Domestic surface water supplies may be contaminated by either the accidental discharge of contaminated water or by deposition from an atmospheric release. Spring and well water should not be affected by an accidental release of radioactive material to the atmosphere or to waterways.

i. Liquid Discharges

1) The contamination of domestic water supplies following discharge of contaminated water is possible only for downstream supplies using the receiving water body as a source. Adverse impact can be avoided by curtailing intake during the course of the passage of the contaminated water.

ii. Atmospheric Discharges

1) Deposition of airborne radioactive contaminants on water surfaces of supply streams, reservoirs and on cistern collectors is more difficult to avoid than intake of contaminated water.

iii. Protective Actions

1) The basis for protection of domestic drinking water supplies is the U.S. EPA "National Interim Drinking Water Regulations," published on December 24, 1975, which includes the National Safe Drinking Water Standards.

2) For controlled liquid discharges to surface water in the course of the accident and its aftermath, the Maximum Permissible Concentrations (MPC) will apply to treated water.

a) The associated dose commitment is 4 mRem/year to any organ.

b) The annual average concentrations of isotopes with half-life greater than 24 hours and yielding 4 mRem/year for a 2-liter daily intake are listed in Appendix B of the Safe Drinking Water Standards.

3) For uncontrolled discharges to surface water and in circumstances where the water supply is influenced by contaminated runoff and fallout, the MPCs multiplied by 12 will apply.

a) This assumes the exposure time will not exceed one year.

b) The associated dose commitment is 50 mRem/year.

4) For actual crisis conditions where no other water supply is available and the duration is less than 30 days, the average concentration may reach 1,000 times the MPCs. The associated dose commitment to any organ is 330 mRem/year.

5) Decisions as to whether or not a particular water supply should be used will be based on a judgment whether or not the health benefits associated with the reduction in exposure to be achieved are sufficient to offset the undesirable health, economic and social effects.

6) In situations involving the contamination of a water supply, methods of providing an alternative water supply may include rationing of uncontaminated supplies, substitution of other beverages, importing water from uncontaminated areas, and the designation of certain critical users.

10. Other Considerations

a. LDEQ, GOHSEP, Louisiana Department of Agriculture and Forestry, and the LSU Cooperative Extension Service should use site-specific information throughout the Ingestion Exposure Pathway EPZ.

i. Part of this information should be in the form of maps that show agricultural land-use data such as location of dairies, pastures, fruit and vegetable farms, slaughter houses, food processing plants, watersheds, water supply intake and treatment plants and reservoirs including dams and canals, highly permeable soils and shallow depths to unconfined ground water within the existing emergency zone.

ii. Another part of this information should identify key organizations for receipt and analysis of all field monitoring data and relevant contacts within the Ingestion Exposure Pathway EPZ.

b. LDEQ, GOHSEP, and Parish local officials should consider a policy of allowing farmers and other personnel to reenter evacuated areas for a limited time to oversee or tend to livestock or other essential functions.

i. This option must be determined by the LDEQ Secretary (or designee), after taking into account the various aspects regarding entering a given area that might jeopardize safety and public health.

ii. If the policy is even considered and adopted, these persons should be registered and consideration should be given to dosimetry, protective clothing, radiation monitoring escort, and ingestion pathway training.

c. LDEQ, GOHSEP, Louisiana Department of Agriculture and Forestry, and Parish officials should consider the development of prescripted messages to specifically address PARs for the agricultural community. Instructional broadcast information should identify a contact for additional information involving these individuals .

11. Public Information and Education

a. LDEQ, Office of the Governor, GOHSEP, Louisiana Department of Agriculture and Forestry, and LSU Cooperative Extension Service, should make provisions for dealing with the informational needs of families, processors, distributors and other participants in the food production process. Information and recommendations for farmers and food processors and distributors on general emergency preparedness should be available.

b. Annual distribution of calendars, leaflets, pamphlets, and brochure to farm workers, farmers, and other participants in the food production process within the 10-mile EPZ should be continued.

i. Specifically, these calendars, leaflets, pamphlets and brochures should address:

1) Effects of radiation and radioactive material deposits on the human food supply;

2) Explanation of the State and local emergency and preventive protective action levels;

3) Identification of preventive protective actions to be taken for protecting food, milk, and water, including livestock, poultry, fruits, vegetables, and other crops;

4) Methods and sources of notifying farmers, food processors and distributors of protective actions in time of emergency; and

5) Where to seek further information during an emergency, such as NOAA weather radio, EAS, television, cable override or other sources.

6) State and local responders should be prepared to disseminate information for implementing protective actions to farmers, food processors and distributors within the entire ingestion exposure pathway EPZ.

7) It is suggested that electronic media, such as the EAS, be utilized for timely dissemination of ingestion pathway protective action recommendations. Meteorological conditions, contamination levels of radionuclides and projected impacts would determine what is considered timely.

8) LDEQ, GOHSEP, Louisiana Department of Agriculture and Forestry and local government should provide additional written materials, and this material should be made available at certain advertised locations such as LSU Cooperative Extension Service/County Agent Offices. This would entail having:

   a) Written instructions on protective measures preprinted or prepared for instant printing and arrangements for distribution to the advertised location during an emergency.

   b) Scripts of emergency instructions available as needed for broadcast via radio, television and NOAA weather radio with broadcast arrangement planned.

   c) Contact points or centers for additional information, such as NOAA weather radio, EAS or other sources:

   d) Educational information on radiation hazards in the ingestion pathway.

   e) Copies of written instructions should be made available upon request.

12. <u>Other Measures Relative to Agriculture</u>

Protective measures for consideration by GOHSEP, Louisiana Department of Agriculture and Forestry and LDEQ.

a. Notification of food processors, distributors and farmers in 50-mile Ingestion Pathway EPZ.

b. Officials within the State should give consideration to an embargo of roadways, railways, airways, waterways and other access routes. Restriction of transportation of agriculture and dairy products within a 10-mile radius of the fixed nuclear power plant.

c. LDEQ, Louisiana Department of Agriculture and Forestry, and Louisiana Department of Health and Hospitals should cooperatively mobilize and deploy field monitoring teams or assessment teams, utilizing proper equipment and protective clothing.

d. Field teams should be able to sample water, soil, vegetables, milk, grain, and food in processing plants. Use of a mobile lab for analysis would be ideal.

e. Throughout the EPZ officials when using protective actions should consider what the public's responses will be to the idea of processing contaminated products into processed products. Due to the public perception of contaminated products, condemnation of the product may be more acceptable.

V. Tabs

Tab 1 Maps and Lists
Tab 2 Criteria for the Acceptability of Milk for Human Consumption
Tab 3 Assessment and Monitoring of the Ingestion Exposure Pathway

TAB 1 TO CHAPTER 8

Maps and Lists

As part of its lead role in the development and implementation of the state-wide radiological emergency response plan for Louisiana, LDEQ is responsible for the development and maintenance of a mapping and supporting documentation program for the ingestion exposure pathway EPZ around each fixed nuclear facility. LDEQ will coordinate this activity with other agencies, such as GOHSEP, LSU Cooperative Extension Services and others. As part of this program, LDEQ will assure the availability of the following:

I. Maps and lists for use in collecting and assessing survey and monitoring data at each site will be available to:

A. LDEQ Headquarters

B. FMT Members

C. Louisiana Department of Agriculture and Forestry

D. Louisiana Department of Wildlife and Fisheries

E. GOHSEP, State EOC

F. Risk Parishes

II. Lists detailing key land use for the ingestion exposure pathway EPZ around each facility will be available to:

A. LDEQ Headquarters

B. Department of Health and Hospitals

C. GOHSEP, State EOC

D. Risk Parishes

E. Louisiana Department of Agriculture and Forestry

F. Louisiana Department of Wildlife and Fisheries

These lists will include major dairies and food processors along with information on farming in the EPZ.

III. Detailed crop information is available on short notice through County Agents of the Agricultural Extension Service. This information is considered confidential, and will only be released at the time of an emergency.

IV. Lists detailing watersheds in the ingestion exposure pathway EPZ for each facility to include water intake and treatment plants and reservoirs. These maps and lists will be available to:

A. LDEQ Headquarters

B. GOHSEP, State EOC

C. Department of Health and Hospitals

D. Risk Parishes

TAB 2 TO CHAPTER 8

Criteria for the Acceptability of Milk for Human Consumption

I. Introduction

LDEQ will use the guidance established by the FDA in "Accidental Radioactive Contamination of Human Food and Animal Feeds - Recommendations for State and Local Agencies" August 13, 1998, as its criterion for the acceptability of milk for human consumption.

Federal guidance has established Protective Action Guides (PAG) for milk and other food items to be 0.5 Rem for committed effective dose equivalent (CEDE) or 5 Rem committed dose equivalent (CDE) to an individual organ or tissue, whichever is most limiting. These PAGs correspond to “intervention levels of dose” consensus values set by international organizations such as the International Atomic Energy Agency (IAEA). Intervention levels are radiation doses at which introduction of protective actions should be considered. The Derived Intervention Levels (DIL), as defined previously, take into account the PAG, fraction of food intake assumed to be contaminated, dose coefficient, and the quantity of food consumed in and appropriate period of time.

II. Derived Intervention Levels (Bq/kg) (individual nuclides, by age group, most limiting of either PAG)*

Radionuclide	3 months	1 year	5 years	10 years	15 years	Adult
Sr-90	308	362	616	389	160	465
I-131	196	167	722	1200	1690	2420
Cs-134	1600	2190	1940	1530	958	930
Cs-137	2000	2990	2810	2180	1370	1360
Ru-103	6770	8410	12200	16400	25000	28400
Ru-106	449	621	935	1340	2080	2360
Pu-238	2.5	21	17	14	12	10
Pu-239	2.2	18	14	13	10	9.8
Am-241	2.0	17	13	11	9.1	8.8

* U.S. Food and Drug Administration, "Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies", August 13, 1998, Table D-5

III. Derived Intervention Levels (pCi/kg) (individual nuclides, by age group, most limiting of either PAG)

Radionuclide	3 months	1 year	5 years	10 years	15 years	Adult
Sr-90	8316	9774	16632	10503	4320	12555
I-131	5292	4509	19494	32400	45630	65340
Cs-134	43200	59130	52380	41310	25866	25110
Cs-137	54000	80730	75870	58860	36990	36720
Ru-103	182790	227070	329400	442800	675000	766800
Ru-106	12123	16767	25245	36180	56160	63720
Pu-238	67.5	567	459	378	324	270
Pu-239	59.4	486	378	351	270	264.6
Am-241	54	459	351	297	245.7	237.6

TAB 3 TO CHAPTER 8

Assessment and Monitoring of the Ingestion Exposure Pathway

I. Scope

A. The principal exposure from this pathway will be from ingestion of contaminated water or foods, such as milk or fresh vegetables. The time of potential exposure could range in length from hours to months. The radial distance for the ingestion exposure pathway EPZ is approximately 50 miles from a fixed nuclear power plant.

B. The purpose of this section is to aid the responder in evaluating the amount of radioactive contamination consisting of particulate deposition on foodstuffs and forage and/or the concentrations of radionuclides in water or milk so that the responder may advise other governmental agencies. Principally, the Department of Agriculture may then take protective actions based on these advisories to protect the general public from the projected dose commitment.

C. This section also establishes Protective Action Guides (PAG) which are the projected dose commitment values to individuals in the general population that warrant protective action following a release of radioactive material.

D. This section furnishes charts and graphs showing derived intervention levels which are calculated radionuclide concentrations in foodstuffs, milk and water that, if ingested without any protective actions, would result in a projected dose commitment equivalent to the PAG's.

E. This section offers protective actions which may be taken to avoid or reduce the projected dose commitment.

II. Protective Action Guides

PAGs used in this section are either those published by the Food and Drug Administration (FDA) or are derived using the dose commitments stated in the FDA PAG and as stated in Chapter 8, Table 1 to Tab 3 and DIL tables in Chapter 8, Table 4a and 4b to Tab 3.

III. Methods

A. Sample Collection:

1. Within 36 to 48 hours after the radioactive plume passage, field teams and surveillance aircraft (if available) will be dispatched into 50-mile ingestion exposure pathway EPZ to determine the deposition boundaries.

2. The LDEQ's Technical Assessment Team consisting of Senior EOF Liaison (SEL), Accident Assessment Coordinator (AAC), Dose

Assessment Coordinator (DAC) and Field Team Coordinator (FTC) (at the EOF or other location) will coordinate with the following for sample collection via the State EOC:

a. Department of Wildlife and Fisheries - fish and wildlife.

b. Department of Health and Hospitals, Office of Public Health, Environmental Health Section - drinking water, processed (consumer ready) milk, fruit, vegetables, poultry, and eggs.

c. Department of Agriculture - animal feed, raw milk, fruit, vegetables, poultry, and eggs.

3. Sample collectors should bear in mind that for a single contaminating event, I-131 in milk will not reach its maximum concentration until approximately 72 hours after the event. Figure 1 demonstrates this phenomenon.

4. All field samples will be taken to the LDEQ Contract Laboratory for analysis. The LDEQ Technical Assessment Team will set priorities for analysis of the samples. If federal assistance is on scene, such as the Federal Radiological Monitoring and Assessment Center (FRMAC), then priority coordination will be through the appropriate FRMAC manager as identified in the FRMAC Operations Organizational Chart. If all available on-scene radiological laboratories are at full capacity, the LDEQ Technical Assessment Team will arrange for sample analysis at one of the following:

a. Louisiana State University, Nuclear Science Center Laboratory

b. Mobile or other laboratory facilities provided by the states under the Southern Mutual Radiation Assistance Plan (SMRAP)

c. U. S. Department of Energy

d. US Environmental Protection Agency

5. Based on sample analysis results, the Louisiana Department of Environmental Quality's (LDEQ) DAC and AAC, using figures 1, 2, 3, & 4 and tables 1, 2, 3, 4, & 5, will assess whether radioactive contamination levels are approaching or have exceeded the PAGs. This information will be provided through SEL to the Secretary of LDEQ who will give instructions to inform the appropriate state or local governmental agency of the potential for dose commitment and will offer protective action plans.

IV. Protective Actions

A. Precautionary Actions

1. Pasture

a. Removal of lactating dairy cows from contaminated pasturage and substitution of uncontaminated stored feed.

b. Substitute a source of uncontaminated water.

2. Milk

a. Withholding of contaminated milk from the market to allow radioactive decay of short-lived radionuclides. This may be achieved by storage of frozen fresh milk, or frozen concentrated milk products.

b. Storage for prolonged times at reduced temperatures also is feasible provided ultra-high temperature pasteurization techniques are employed for processing.

c. Diversion of fluid milk for production of dry whole milk, nonfat dry milk, cheese, butter, or evaporated milk.

3. Fruits and vegetables

a. Washing, brushing, scrubbing, or peeling to remove surface contamination.

b. Preservation by canning, freezing, and dehydrating or storage to permit radioactive decay of short-lived radionuclides.

4. Grains

a. Milling

b. Polishing

5. Other food products, processing to remove surface contamination.

6. Meat and meat products, intake of Cs-134 and Cs-137 by an adult via the meat pathway may exceed that of the milk pathway; therefore, levels of cesium in milk approaching the "response level" should cause surveillance and protective actions for meat as appropriate.

7. Animal feeds other than pasture, action should be on a case-by-case basis taking into consideration the relationship between the radionuclide concentration in animal feed and the concentration of the radionuclides in human food. For hay and silage fed to lactating cows, the concentration should not exceed that equivalent to the recommendation for pasture.

B. Protective Action at PAG Levels

Isolate food containing radioactivity to prevent its introduction into commerce and determine whether condemnation or another disposition is appropriate.

V. Duration of Protective Actions for Milk

If cattle are not removed from contaminated forage, it is expected that for a single contaminating event, protective actions would not extend beyond 1 or 2 months due to the reduction of forage concentrations by weathering and by radioactive decay. The effective rate of removal from pasture for I-131 is 0.136 day^{-1}(that is, per day). Therefore time required for I-131 deposited on forage to be diminished to 1% as a result of the above is 34 days. Any percentage for remaining contamination (%R) can be calculated as follows:

$$\%R = e^{-.136(t)} \times 100$$

where, t (in days) is the elapsed time since the deposition.

VI. Radiological Half-Lives, Mean Lifetimes, Effective Half-Lives on Vegetation, and Mean Effective Lifetime on Vegetation for Typical Radionuclides Found in a Nuclear Reactor Core

These are provided in Table 5 to Tab 3.

VII. Dairy Locations

A list of the producing farms/dairies in parishes/counties within the 50-mile ingestion exposure pathway EPZ for the Waterford 3 Steam Electric Station, River Bend Station, and Grand Gulf Nuclear Station is available separately, through Louisiana Department of Environmental Quality (LDEQ), Governor's Office of Homeland Security & Emergency Preparedness (GOHSEP), or LSU Cooperative Extension Services.

VIII. Radionuclide Mixtures

For any Nuclide that is present in the mix, the ratio of its concentration level to the derived intervention level should be less than 1.

FIGURES TO TAB 3, CHAPTER 8

Explanation of Figures

Figure 1: Depicts the concentration in milk either in uCi/1 or % of maximum concentration versus time in days or hours for I-131 following a single contaminating event where initial deposition equaled 0.13 uCi/m^2. The value 0.13 uCi/m^2 equals the Preventive PAG limit or 1.5 rem to the thyroid.

Example: At = 72 hours after ingestion, I-131 reaches the maximum value of (100%) of 0.015 uCi/l.

Figure 2: Depicts the concentration in milk in uCi/l of I-131, I-133 & I-135 per pCi/m^2 of deposition versus time in hours, normalized to unit deposition from a single contaminating event.

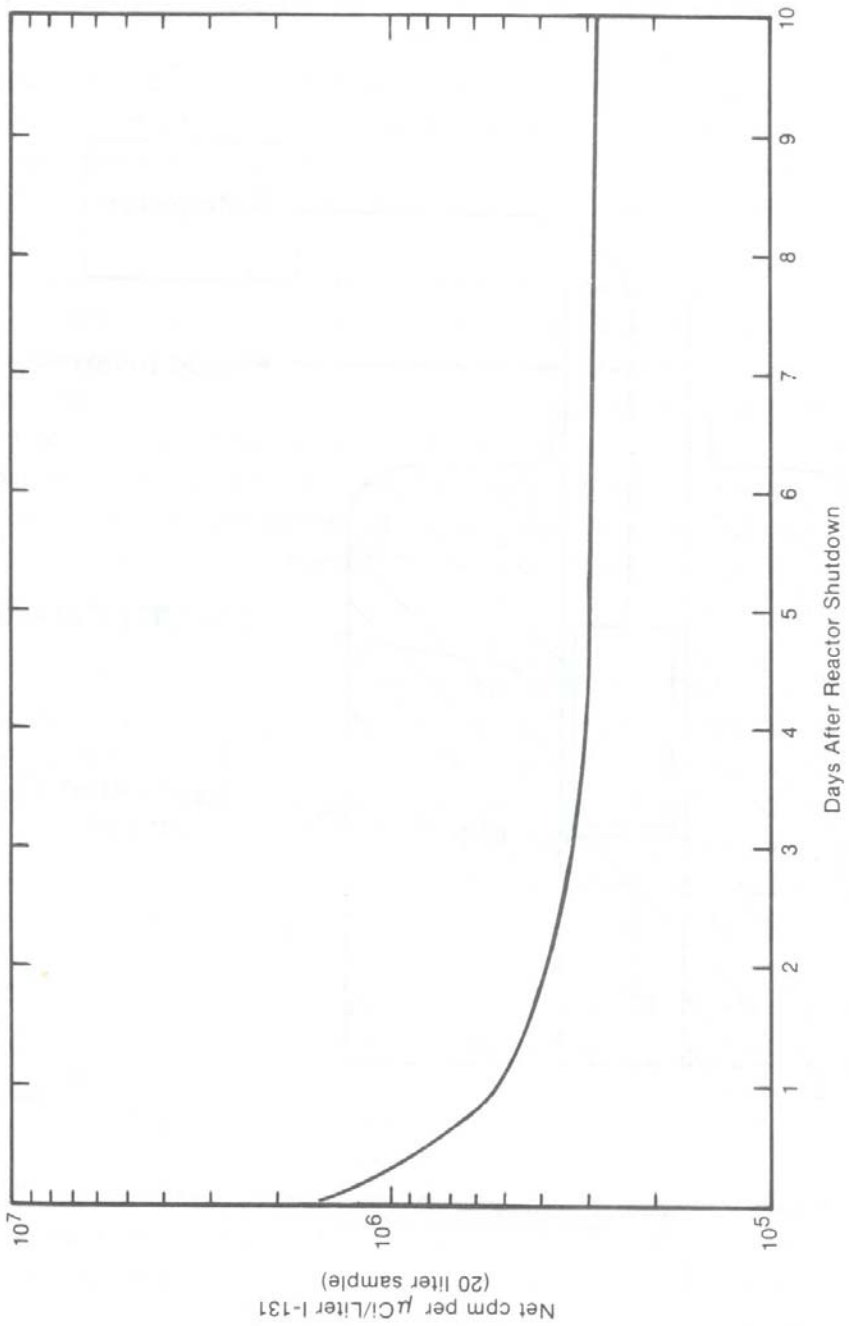
Example: At 72 hours after ingestion of forage by dairy cattle, if there was an I-131 initial deposition of 10 uCi/m^2, then one could expect a milk concentration of 1.3 uCi/1. ($1.3x10-^1$ uCi/l x 10 uCi/m^2).

Figure 3: Same as Figure 2 except nuclides are Cs-134 & Cs-137.

Figure 4: Same as Figure 2 except nuclides are Sr-89, Sr-90 & Sr-91.

FIGURE 1 TO TAB 3, CHAPTER 8

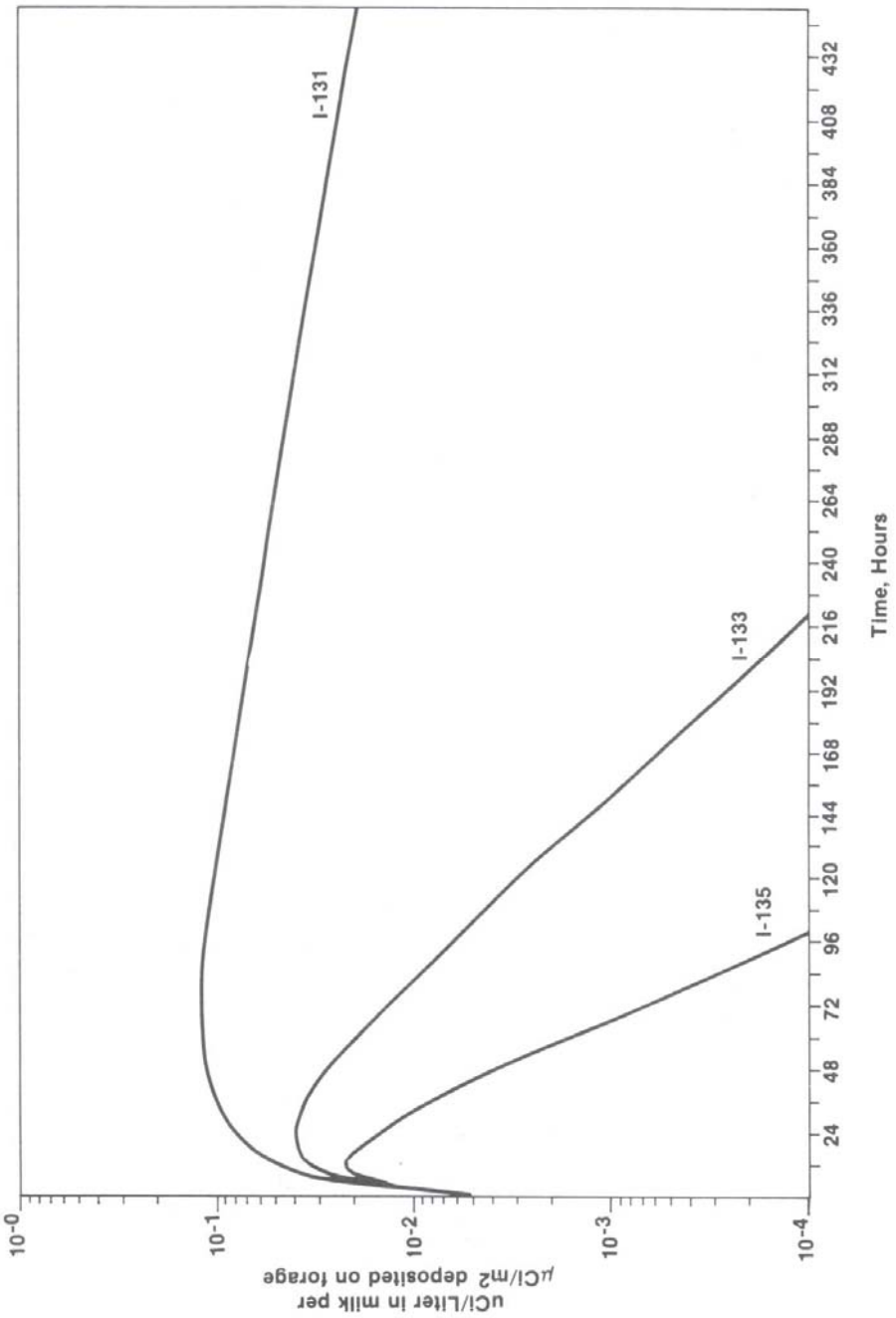
I-131 Concentration in Milk Prior to Milking for a Single Contaminating Event with an Initial Deposition of 0.13 µCi/m*



* Federal Emergency Management Agency, "Guidance on Offsite Emergency Radiation Measurement Systems, Phase 2 - The Milk Pathway," FEMA REP-12, September 1987, Figure 3

FIGURE 2 TO TAB 3, CHAPTER 8

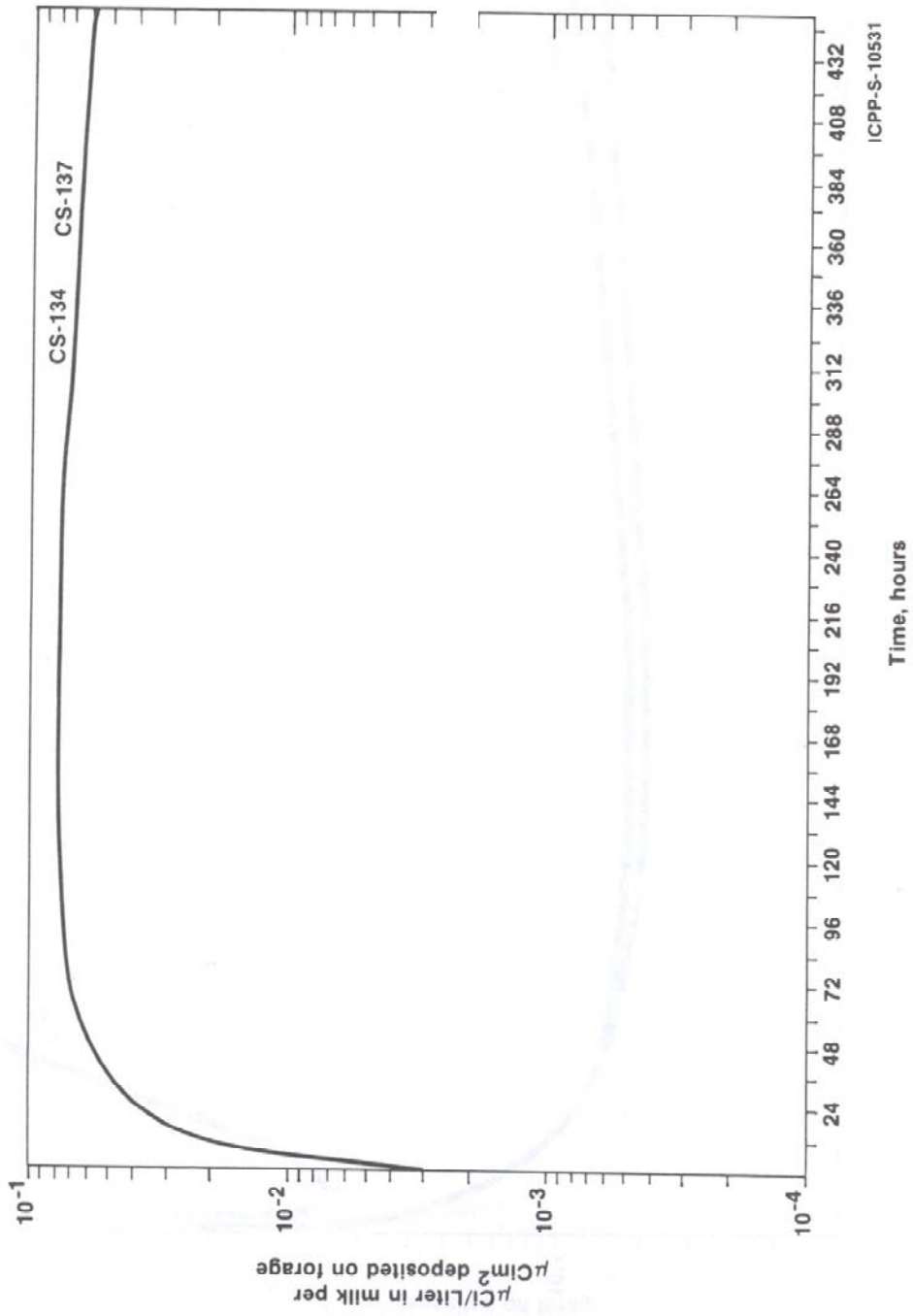
Milk Concentration of I-131, I-133, and I-135 Normalized to Unit Deposition from a Single Contaminating Event*



* Federal Emergency Management Agency, "Guidance on Offsite Emergency Radiation Measurement Systems, Phase 2 - The Milk Pathway," FEMA REP-12, September 1987, Figure D-1

FIGURE 3 TO TAB 3, CHAPTER 8

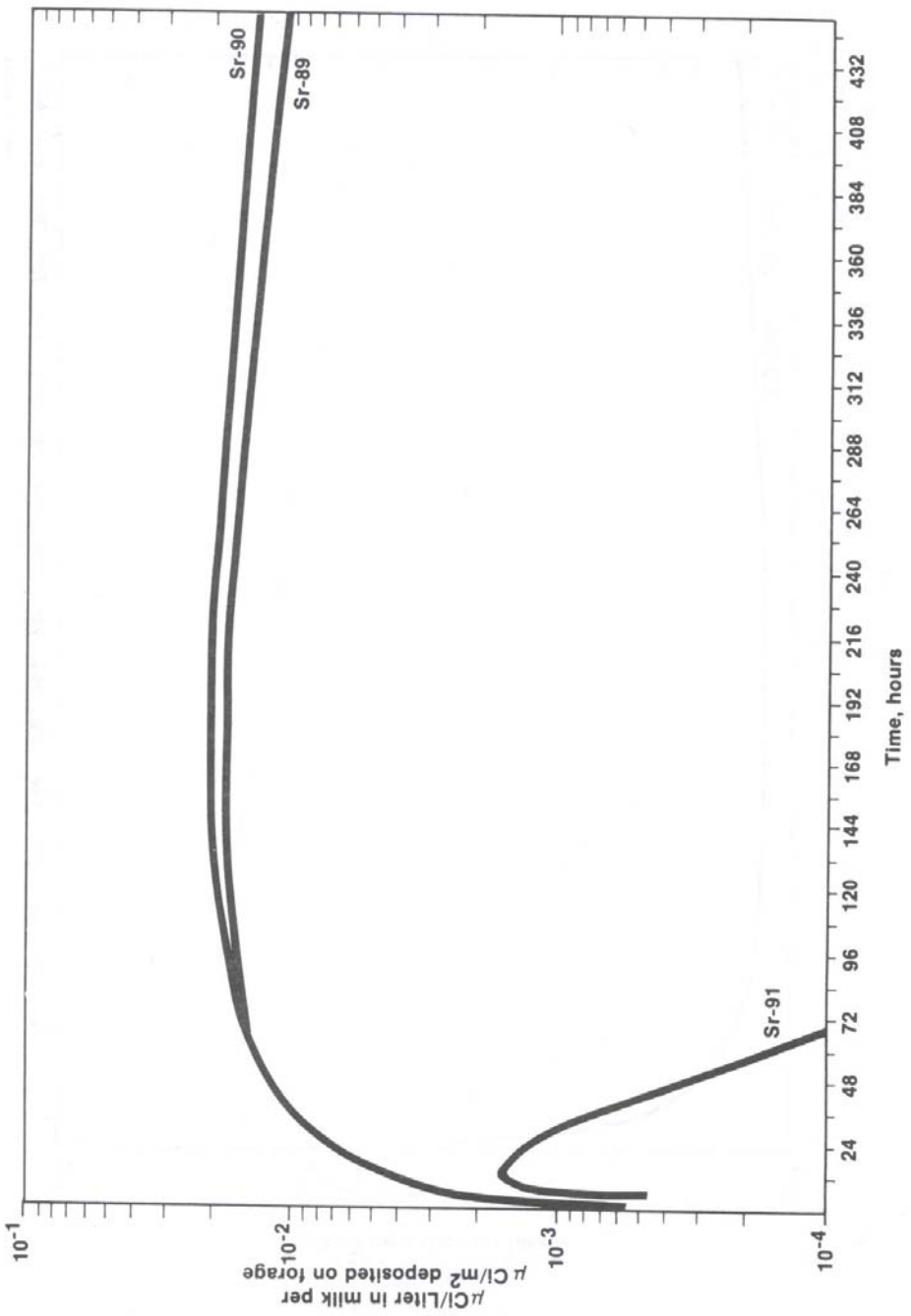
Milk Concentration of Cs-134 and Cs-137, Normalized to Unit Deposition from a Single Contaminating Event*



* Federal Emergency Management Agency, "Guidance on Offsite Emergency Radiation Measurement Systems, Phase 2 - The Milk Pathway," FEMA REP-12, September 1987, Figure D-2

FIGURE 4 TO TAB 3, CHAPTER 8

Milk Concentration of Sr-89, Sr-90, and Sr-91, Normalized to Unit Deposition from a Single Contaminating Event*



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* Federal Emergency Management Agency, "Guidance on Offsite Emergency Radiation Measurement Systems, Phase 2 - The Milk Pathway," FEMA REP-12, September 1987, Figure D-3

TABLES TO TAB 3, CHAPTER 8

Explanation of Tables

Table 1: FDA Protective Action Guides for acceptable dose limits from ingestion of contaminated foodstuffs

Table 2: Depicts calculated levels for milk which would produce a dose commitment to an infant of 1.5 rem to thyroid, 0.5 rem to the whole body or red bone marrow.

Example: If the initial deposition of 1-131 was 0.13 µCi/m^2, then the forage should show a concentration of 0.05 µCi/kg wet weight, and the milk should show a maximum concentration of 0.015 µCi/1 (after 72 hours). The total intake would have been 0.09 µCi. (This relates to a dose conversion value of 1 rem dose commitment to the thyroid for each 0.06 µCi consumed by the infant or 16.7 rem per µCi).

Table 3: Depicts calculated levels for milk which would produce a dose commitment of 15 rem thyroid, 5 rem whole body or red bone marrow.

Table 4: These are the Derived Intervention Levels (DIL) from the FDA as established in "Accidental Radioactive Contamination of Human Food and Animal Feeds - Recommendation for State and Local Agencies," August 13, 1998.

Table 5: Compilation of Derived Intervention Levels (Bq/kg) from "Accidental Radioactive Contamination of Human Food and Animal Feeds - Recommendation for State and Local Agencies," August 13, 1998, Derived Intervention Levels (DIL) and data from FDA/ORA CPG 7119.14 Sec. 560.750 "Guidance Levels for Radionuclides in Domestic and Imported Foods."

Table 6: Lists radiological half-lives.

Mean lifetime - the number of atoms decaying during the interval from t to t+dt is n and, since each of these atoms had a lifetime t, the total lifetime associated with this interval is Nt. An integration of this factor over all values of t gives the total lifetime of all N_o atoms. Division by N_o gives the mean lifetime T (mean).

$$T(\text{mean}) = 1.44T$$

Where, T = radiological half-life.

Effective half-life - a function of the radiological half-life (T) and the weathering half-life (Tw).

$$T_E = \frac{T \times T_w}{T + T_w}$$

Mean effective lifetime - the same mathematical relationship to the effective half-life as the mean life is to the radiological half-life.

$$T_E(\text{mean}) = 1.44\ T_E$$

TABLE 1 TO TAB 3, CHAPTER 8

FDA Protective Action Guides for Ingestion of Contaminated Foodstuffs*

PAG	Dose Limit in Rem
CEDE	0.5
CDE	5

* U.S. Food and Drug Administration, "Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies", August 13, 1998

TABLE 2 TO TAB 3, CHAPTER 8

Grass-Cow-Milk Pathway

FDA Radionuclide Response Levels*

"Derived response levels for grass-cow-milk pathway equivalent to Preventative PAG dose commitment of 1.5 rem thyroid, 0.5 rem whole body or red bone marrow to infant as critical segment of population."†

	I 131	Cs 134‡	Cs 137§	Sr 90	Sr 89
Initial Deposition (µCi/sq. m.)	0.13	2	3	0.5	8
Forage (µCi/Kg)**	0.05	0.8	1.3	0.18	3
Peak Activity: Milk (µCi/l)	0.015	0.15	0.24	0.009	0.14
Total Intake†† (µCi)	0.09	4	7	0.2	2.6

* U.S. Food and Drug Administration, "Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies", August 13, 1998

† Federal Emergency Management Agency, "Guidance on Offsite Emergency Radiation Measurement Systems, Phase 2 - The Milk Pathway," FEMA REP-12, September 1987, Table 1

‡ Intake of cesium via the meat/person pathway for adults may exceed that of the milk pathway. Therefore, such levels in milk should cause surveillance and protective actions for meat as appropriate. If both Cs-134 and Cs-137 are equally present, as might be expected for reactor accidents, the response levels should be reduced by a factor of two.

§ Intake of cesium via the meat/person pathway for adults may exceed that of the milk pathway. Therefore, such levels in milk should cause surveillance and protective actions for meat as appropriate. If both Cs-134 and Cs-137 are equally present, as might be expected for reactor accidents, the response levels should be reduced by a factor of two.

** Fresh weight

†† Integrates total ingestion from a single contaminating event

TABLE 3 TO TAB 3, CHAPTER 8

Grass-Cow-Milk Pathway

FDA Radionuclide Response Levels*

"Derived response levels for grass-cow-milk pathway equivalent to Emergency PAG dose commitment of 15 rem thyroid, 5 rem whole body or red bone marrow."†

	Initial Deposition ($\mu Ci/m^2$)	Forage Pasture ($\mu Ci/kg$)‡	Peak Activity Milk ($\mu Ci/l$)	Total Intake§ (μCi)
I-131				
Infant**	1.3	0.5	0.15	0.9
Adult	18	7	2	10
Cs-134				
Infant††	20	8	1.5	40
Adult††	40	17	3	70
Cs-137				
Infant	30	13	2.4	70
Adult‡‡	50	19	4	80
Sr 90				
Infant	5	1.8	0.09	2
Adult	20	8	0.4	7
Sr 89				
Infant	80	30	1.4	26
Adult	1,600	700	30	400

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* U.S. Food and Drug Administration, "Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies", August 13, 1998

† Federal Emergency Management Agency, "Guidance on Offsite Emergency Radiation Measurement Systems, Phase 2 - The Milk Pathway," FEMA REP-12, September 1987, Table 2

‡ Fresh weight

§ Integrates total ingestion from a single contaminating event

** Newborn infant includes fetus (pregnant woman) as critical segment of population for iodine-131

†† "Infant" refers to a child less than one year of age

‡‡ Intake of cesium via the meat/person pathways for adults may exceed that of the milk pathway. Therefore, such levels in milk should cause surveillance and protective actions for meat as appropriate. If both Cs-134 and Cs-137 are equally present, as might be expected for reactor accidents, the levels should be reduced by a factor of two.

TABLE 4 TO TAB 3, CHAPTER 8

Derived Intervention Levels
(radionuclide groups, most limiting of all diets)*

Radionuclide Group	DIL	Age Group
SR-90	160	15 years
I-131	170	1 year
Cs group	1200	Adult
Ru-103†	6800	3 months
Ru-106‡	450	3 months
Pu + Am group	2	3 months

* U.S. Food and Drug Administration, "Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies", August 13, 1998

† Due to the large differences in the DILs for Ru-103 and Ru-106, the individual concentrations of Ru-103 and Ru-106 are divided by their respective DILs and then summed. The sum must be less than one.

‡ Due to the large differences in the DILs for Ru-103 and Ru-106, the individual concentrations of Ru-103 and Ru-106 are divided by their respective DILs and then summed. The sum must be less than one.

TABLE 5 TO TAB 3, CHAPTER 8

Derived Intervention Levels* (Bq/kg)
(individual radionuclides, all age groups)

Radionuclide	3 months	1 year	5 years	10 years	15 years	Adult
Sr-89	1400	2400	3600	4500	5800	8700
Sr-90	308	362	616	497	286	505
Y-91	1500	1900	2900	3800	6200	7400
Zr-95	4000	5000	7000	9700	14000	16000
Nb-95	12000	14000	19000	26000	35000	40000
Ru-103	6770	8410	12200	16400	25000	28400
Ru-106	449	621	935	1340	2080	2360
Te-132	6700	8500	38000	55000	94000	150000
I-131	659	548	2410	4110	5540	8180
I-129	360	250	250	200	230	280
I-133	25000	23000	84000	180000	280000	420000
Cs-134	1600	2190	1940	1530	958	930
Cs-137	2000	2990	2810	2180	1370	1360
Ba-140	6900	10000	14000	18000	22000	33000
Ce-141	8600	11000	17000	23000	36000	43000
Ce-144	500	770	1200	1700	2700	3100
Np-237	7	67	59	54	41	39
Np-239	29000	36000	180000	260000	400000	470000
Pu-238	3.1	27	25	24	22	20
Pu-239	2.9	24	23	21	20	18
Pu-241	180	1500	1200	1100	960	930
Am-241	3.3	27	25	24	21	20
Cm-242	29	180	260	330	510	590
Cm-244	3	24	27	32	33	33

* Compilation of data from: U.S. Food and Drug Administration, "Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies", August 13, 1998, Table E-5; and FDA/ORA CPG 7119.14 Sec. 560.750 “Guidance Levels for Radionuclides in Domestic and Imported Foods,” Table 6

TABLE 6 TO TAB 3, CHAPTER 8

Radiological Half-Lives, Mean Lifetimes, Effective Half-Lives on Vegetation, and Mean Effective Lifetime on Vegetation for Typical Radionuclides Found in a Nuclear Reactor Core*

Radionuclide	Effective Half-Life on Vegetation Radionuclide (days)T_E (mean)	Mean Effective Lifetime on Vegetation (days) T_E (mean)	Mean Lifetime (days) T (mean)	Radiological Half-Life (days) T (mean)
Cobalt-58	11.69	16.84	102.24	71.0
Cobalt-60	13.90	20.01	2674.80	1920
Rubidium-86	8.01	11.53	26.93	18.7
Strontium-89	11.03	15.89	75.02	52.1
Strontium-90	13.98	20.13	15,880.00	11030
Strontium-91	0.39	0.56	0.58	0.40
Ytrium-90†	2.24	3.23	3.84	2.67
Yttrium-91	11.32	16.29	84.96	59
Zirconium-95	11.53	16.60	93.89	65.2
Zirconium-97	0.68	0.97	1.02	0.71
Niobium-95	10.00	14.40	50.40	35.0
Molybdenum-99	2.33	3.36	4.03	2.8
Technetium-99m	0.24	0.35	0.36	0.25
Ruthenium-103	10.34	14.88	56.88	39.5
Ruthenium-105	0.18	0.26	0.27	0.18
Ruthenium-106	13.48	19.42	527	366‡
Rhodium-105	1.36	1.95	2.16	1.50
Tellurium-127	0.38	0.55	0.56	0.39
Tellurium-127m	12.41	17.87	157	109.00
Tellurium-129	0.05	0.07	0.07	0.05

* Compilation of data from "Radiological Health Handbook," FDA, January 1970 and "Guidance on Offsite Emergency Radiation Emergency Systems, Phase 3, Water and Non-Dairy Food Pathway," Table A-2, FEMA-REP-13, May 1990"

† If strontium-90 is present in an airborne release to the environment, yttrium-90 will appear to have an effective half-life and mean effective lifetime on vegetation which corresponds to that of strontium-90.

Radionuclide	Effective Half-Life on Vegetation Radionuclide (days)T_E (mean)	Mean Effective Lifetime on Vegetation (days) T_E (mean)	Mean Lifetime (days) T (mean)	Radiological Half-Life (days) T (mean)
Tellurium-129m	0.33	0.48	0.49	.340
Tellurium-131m	1.15	1.65	1.80	1.25
Tellurium-132	2.64	3.80	4.68	3.25
Antimony-127	3.04	4.38	5.59	3.88
Antimony-129	0.18	0.25	0.25	0.18
Iodine-131	5.11	7.36	11.59	8.05
Iodine-132*	0.09	0.14	0.14	0.09
Iodine-133	0.82	1.19	1.26	0.84
Iodine-134	0.04	0.05	0.05	0.04
Iodine-135	0.27	0.39	0.40	.280
Cesium-134	13.74	19.79	1080.00	750
Cesium-136	6.74	9.71	18.72	13
Cesium-137	13.98	20.13	15,840	11000
Barium-140	6.59	9.63	18.43	12.8
Lanthanum-140	1.49	2.15	2.40	1.67
Cerium-141	9.77	14.06	46.51	32.3
Cerium-143	1.26	1.81	1.99	1.38
Cerium-144	13.34	19.21	409	284
Praseodymium-143	6.92	9.97	19.73	13.7
Neodymium-147	6.19	8.92	15.98	11.1
Neptunium-239	2.01	2.90	3.38	2.35
Plutonium-238	13.99	20.15	46,800	32500
Plutonium-239	14.00	20.16	$1.2x10^7$	$8.9x10^6$
Plutonium-240	14.00	20.16	$3.4x10^6$	$2.4x10^6$
Plutonium-241	13.96	20.11	7,704	5350
Americium-241	14.00	20.16	$2.16x10^5$	1.5e5
Curium-242	12.89	18.57	235	163
Curium-244	13.97	20.12	9,547	6630

* If tellurium-13 is present in an airborne release to the environment, iodine-132 will appear to have an effective half-life and mean effective lifetime on vegetation which corresponds to that of tellurium-132.

CHAPTER 9

Radiological Exposure Control

I. Purpose

To establish policy and procedures for limiting radiological exposure to the public and off-site emergency workers' radiological exposure/contamination in the event of an accident at a fixed nuclear facility affecting Louisiana.

II. Responsibilities

A. The State of Louisiana is responsible for:

1. Providing resources and support to the survey and decontamination efforts of risk and support Parishes.
2. Implementing an assessment program and maintaining related records of the off-site radiological impact of an accident.

B. Risk and support Parishes are responsible for:

1. Providing trained personnel to conduct surveys and to assist with procedures for the decontamination of the public and emergency workers.
2. Maintaining dosimeters and decontamination survey equipment necessary for use prior to State response at the time of an accident and reporting resource requirements to GOHSEP.
3. Maintaining necessary decontamination related records and reporting this information to LDEQ at the conclusion of the emergency.

C. The Federal government, through the Department of Energy (DOE) in conjunction with the Federal Radiological Monitoring and Assessment Center (FRMAC) is responsible for supporting State radiological exposure control efforts, including the augmentation of personnel, equipment and supplies as well as assisting with the disposal of contaminated materials.

III. Concept of Operation

A. LDEQ is the lead State agency for the assessment of fixed nuclear facility accidents and is capable of making off-site dose projections on a continuous basis.

B. At the time of an accident, LDEQ will coordinate with the Governor's Office of Homeland Security & Emergency Preparedness (GOHSEP) to assure that any protective action recommendations (PAR) and appropriate radiological exposure control measures are disseminated to the affected Parishes, and other jurisdictions, if and as appropriate, with a sense of

urgency without undue delay. This process will generally take place at the State Emergency Operations Center (State EOC).

Note: In the event, the State EOC is not activated or operational, or coordination cannot be conducted with the Director or designee of the Governor's Office of Homeland Security & Emergency Preparedness (GOHSEP) - upon the decision of the LDEQ Secretary or designee on the protective action recommendations and appropriate radiological exposure control measures, LDEQ Secretary or designee will exercise every effort to disseminate these PARs and measures to the affected Parishes and other jurisdictions, if and as appropriate, with a sense of urgency without undue delay.

C. Risk and support Parishes are responsible for providing contamination surveys and offering decontamination to the public, if necessary.

1. Dosimeters and survey instruments will be distributed to emergency workers assisting with the decontamination of the general public according to established plans and procedures.

2. Decontamination surveys and procedures will be conducted at reception centers for the general public.

   a. Decontamination surveys will be offered at reception centers for persons intending to use public shelters as well as for those persons making other living arrangements during the emergency.

   b. If additional decontamination for contaminated individuals is determined to be necessary, arrangements will be made to transport these persons to medical facilities capable of handling contaminated victims.

3. Arrangements for surveys and decontamination of vehicles, clothing and personal items belonging to the general public will take place at reception centers, if necessary.

4. Emergency workers conducting decontamination surveys will maintain adequate records and will report all necessary survey information, resource shortages and the need for contaminated waste disposal to LDEQ.

D. Responsibility for authorizing emergency workers to incur exposures in excess of the EPA Protective Action Guides (PAGs) for the general population will rest with the unit of government for whom the worker is employed. State emergency workers will be authorized to exceed the EPA PAGs for the general population by the LDEQ Secretary. Parish emergency workers will be authorized to exceed these pre-established levels by the chief executive officer of the Parish after consultation with LDEQ. This decision process is discussed in more detail in Section V of this Chapter.

E. Each facility will provide for the disposal of off-site radioactive waste resulting from an accident. LDEQ will provide technical advice and assistance to this effort, as necessary.

IV. Radiological Exposure Control Measures for the General Public

A. In the event of a fixed nuclear facility accident with projected off-site effects exceeding the U.S. EPA Protective Action Guides, the State of Louisiana has established protective response measures for the general public which include sheltering, respiratory protection, access control and evacuation.

NOTE: Potassium Iodide will be made available to institutionalized persons, mainly those persons residing in nursing homes or confined to hospitals and prisons. The LDEQ Secretary shall seek the advice of the State Health Officer at the time of the accident to discuss medical factors since attending physicians at medical and nursing facilities must approve administration of Potassium Iodide for their patients (see Tab 1 to Chapter 9).

B. If the off-site release is of the level to warrant evacuation and LDEQ determines that the release has the potential for contamination of the public, then arrangements will be made to perform decontamination surveys and procedures within twelve hours of the completion of the evacuation.

1. Risk and support Parishes will perform contamination surveys at reception centers for all anticipated evacuees within twelve hours of the completion of the evacuation. It is anticipated the number of evacuees to be surveyed within the 12-hour period will be 20% of the 10—mile EPZ population.

2. Decontamination surveys will be conducted using a Ludlum Model 3 or 3A Geiger-Mueller Survey Meter (Range: 0 -200 mR/hr or 0-500 kcpm) or equivalent. Alternatively, portal monitors may be used.

   a. Sufficient quantities of Model 3 or 3A survey meter (or equivalent) will be available at each survey site to provide one survey meter for each monitor. Alternatively, portal monitors may be used.

   b. It should be noted that Model 3 or 3A survey meter (or equivalent) will be used only for detecting contamination on persons, vehicles and materials. Due to the possibility of incorrect measurements in the presence of Xenon-133 gas, these meters will not be used for plume exposure monitoring. Portal monitors may be used in lieu of Model 3 or 3A or equivalent.

   c. GOHSEP will arrange to supply involved Parishes with additional survey/detection equipment at the time of an accident according to established procedures.

3. Individuals will be surveyed for contamination in accordance with established procedures. Persons showing on their body a reading greater than 0.1 mR/hour above background on a survey meter, greater than 300 cpm, or persons setting off the alarm while surveyed with a portal monitor, will be considered contaminated, and will be processed through decontamination procedures. Note: Some facilities use action levels of greater than 100 cpm above background or 2X background.

4. Arrangements will be made at reception centers to register all evacuees who pass through, and to separate persons who have been certified as being free from contamination from those persons who have not been surveyed.

5. Reception center managers will be responsible for reporting the following information to the Parish EOC at 2-hour intervals following the commencement of surveying:

   a. The number of persons surveyed.

   b. The number of persons determined to be contaminated.

   c. The number of persons decontaminated at the reception center.

   d. The number of persons sent to a medical facility for further decontamination procedures.

   e. The highest reading above 0.1 mR/hour or 300 cpm for each contaminated individual. Note: Some facilities use action levels of greater than 100 cpm above background or 2X background.

   f. Any contamination disposal needs.

6. Parish EOCs will be responsible for consolidating all decontamination information received from reception centers and reporting it to LDEQ at two-hour intervals following the commencement of procedures.

C. The decontamination of individuals will take place according to established procedures. Each reception center will be required to have available the following:

1. Shower facilities for men and women.

2. A change of clothing for contaminated individuals.

3. Facilities for storing contaminated items, including clothing. (These facilities will usually consist of a separate, locked room with metal containers lined with plastic bags. The waste will be held in a restricted area.)

4. Vehicles and drivers to transport contaminated individuals to medical facilities.

D. The decision on decontamination of personal belongings and vehicles of the general public will be made at reception centers.

1. Clothing

Clothing with levels of contamination greater than 0.1 mR/hour or greater than 300 cpm will be stored in a separate restricted area. The Parish EOC will contact LDEQ to determine the best method of decontamination or disposal. Note: Some facilities use actions levels of greater than 100 cpm or 2X background.

2. Vehicles

Vehicles will be surveyed at reception centers after they are parked and as time permits. Vehicles found to contain interior contamination will be impounded and the involved Parish will contact LDEQ for decontamination arrangements.

E. The disposal of contaminated waste generated by Parish radiological exposure control efforts will be handled by the involved utility with the LDEQ team providing technical advice and assistance as requested.

V. Radiological Exposure Control Measures for Emergency Workers

A. At the time of a fixed nuclear facility accident, emergency workers may be called upon to perform functions within risk areas ranging from public notification to conducting life-saving missions. For purposes of this Plan, persons assisting with surveying and decontamination at reception centers will be included in radiological exposure control measures used for emergency workers.

NOTE: Emergency workers are those persons engaged in public service activities, and as such, they voluntarily place themselves under different criteria for protection than the general public.

B. Prior to or at the time protective response measures are recommended to the public, emergency workers will initiate steps to protect against radiation exposure.

1. The United States Environmental Protection Agency (EPA) Guidance on dose limits, given as total effective dose equivalent (TEDE), for workers performing emergency services will be utilized for the purpose of radiation exposure control. This guidance is provided in the “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents” (EPA 400 R 92-001, May 1992) as follows:

Guidance on Dose Limits for Workers Performing Emergency Services*

Dose Limit† (rem)	Activity	Condition
5	all	
10	protecting valuable property	lower dose not practicable
25	lifesaving or protection of large population	lower dose not practicable
>25	lifesaving or protection of large population	only on a voluntary basis to persons fully aware of the risks involved

2. Declared pregnant females must take extra precaution when performing as an emergency worker. The dose equivalent to the embryo/fetus cannot exceed 0.5 R due to occupational exposure during the entire pregnancy [10 CFR 20.1208]. A minor, a person less than 18 years old, also has an occupational dose limit of 0.5 R, 10% of the dose limit for adults [10 CFR 20.1207]. EPA 400-R-94-001 recommends using the same values during an emergency, stating the performance of emergency duties should be limited to non-pregnant adults.

3. Specific authorization by the LDEQ Secretary shall be necessary to exceed the 5 R TEDE dose limit for all LDEQ emergency workers. For all other State agencies, LDEQ Secretary will provide advisory in this regard, either directly or through coordination with the State Emergency Operations Center (EOC).

4. For emergency workers under local government jurisdictions, specific authorization to exceed the 5 R TEDE dose limits or other limits specified in the local government plan and procedures, must be authorized by the highest elected official(s) at the local government level. The local government official(s) may elect to consult LDEQ for this purpose.

5. All other agencies/organizations are expected to consult LDEQ, either directly or through coordination with the State EOC, for this purpose.

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* EPA-400-R-92-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, Table 2-2

† Sum of external effective dose equivalent and committed effective dose equivalent to non-pregnant adults from exposure and intake during an emergency situation. Workers performing services during emergencies should limit dose to the lens of the eye to three times the listed value and doses to any other organ (including skin and body extremities) to ten times the listed value. These limits apply to all doses from an incident, except those received in unrestricted areas as members of the public during the intermediate phase of the incident.

6. The Use of Dosimeters

For the purpose of emergency workers exposure control, dosimeters and permanent exposure recording devices will be used.

a. Each LDEQ (or other State agency, as appropriate) emergency worker will be provided with dosimeters as follows at the time protective response is called for:

   i. an individual electronic dosimeter having a range of 0 - 100R or higher.

   ii. a permanent exposure recording device, such as an optically stimulated luminescent dosimeter (OSL) or thermoluminescent dosimeter (TLD).

b. For emergency response within the 10-mile EPZ, emergency workers are assigned turn back limits of 200 mR (notify supervisor) and 1 R (leave the area and then notify a supervisor).

c. In addition to an initial and a final reading, emergency workers will record dosimeter readings every 30 minutes (or more frequently). LDEQ dosimetry will normally be distributed from and returned with the recorded readings to Headquarters. Further dosimetry instructions can be found in the emergency implementing procedures noted in LPRRP, Basic Plan, Section VIII, Tab 2.

d. Perment Record Dosimeters (PRDs) are sent back to the Manufacturer for readings. Early readings of PRDs will be followed by the manufacturer's Emergency Service procedure.

e. Emergency workers under local government jurisdictions will use the following:

   i. for routine emergency services in or around the close proximity of a real or potential radioactive plume:

      1) a permanent exposure recording device, such as a thermoluminescent dosimeter (TLD);

      NOTE: For a group of emergency workers, remaining in relatively close proximity of each other, the benefit of "area dosimetry" may be utilized, whereby one or more dosimeters of each required range, as specified in items (ii) and (iii) below, will be issued to such a group in lieu of a set of self-reading dosimeters for each individual emergency worker.

2) Direct Reading Dosimeter (DRD) option a) or b);

a) a dosimeter having a range falling between 0 mR and 1500 mR (example: 0-100 mR, 0-200 mR, 0-500 mR, 0-1500 mR); plus

a dosimeter having a range of 0-5 R or higher (example: 0-5 R, 0-10 R, 0-15 R, 0-20 R)

b) an electronic dosimeter having range falling between 0 mR to 100 R or higher in place of both low and high range direct reading dosimeter

ii. for lifesaving or protection of large population (on a case-by-case basis):

1) a dosimeter having a range falling between 0 R and 25 R or higher (example: 0-25 R, 0-50 R, 0-100 R); these dosimeters may be in addition to the ones specified above; and a permanent exposure recording device, such as a thermoluminescent dosimeter (TLD).

NOTE: Dosimeters with a range falling between 0 R and 25 R or higher (example: 0-25 R, 0-50 R, 0-100 R) may not be a part of the routine dosimetry inventory of the local government jurisdictions. They will be procured on a case-by-case basis.

NOTE: All dosimeters for use by emergency workers under local government jurisdictions can be replaced by one electronic dosimeter having a range of 0–100 R or higher (these electronic dosimeters usually have a range of 0-999 R).

iii. for routine emergency services outside of the 10-mile EPZ:

1) Emergency workers performing services, such as monitoring and decontamination of persons and vehicles at locations, such as reception care centers and monitoring/decontamination stations, outside of plume EPZ and having no direct impact of radioactive plume at that location during an incident, may utilize the benefit of “area dosimetry” instead of personal

dosimeters for each emergency worker, provided a permanent exposure recording device (such as, TLD) is used by each emergency worker at these locations.

2) The emergency workers, performing services at these locations, will report to their supervisors when area dosimeter(s) will read 200 mR.

3) If the area dosimeter(s) read 1 R, these emergency workers will immediately move to a lower radiation background area and report to their supervisors.

iv. All emergency workers, at the end of their mission, or any other time as determined by the supervisor, will be instructed to report to a pre-determined decontamination facility.

v. If an emergency worker receives a dose (TEDE) of 10 Rem or above, he/she may be instructed to seek medical treatment at the nearest available facility capable of dealing with radiation exposure cases.

e. Resources for local government emergency workers protection will be drawn primarily from risk and support parishes, and to be augmented by the state government as necessary. These resources will include dosimeters and permanent exposure recording devices (such as, TLD).

7. <u>The use of Potassium Iodide (KI)</u>

a. KI is a substance which serves to block the absorption of radioiodine by the thyroid gland.

b. KI will be available for use by emergency workers operating in the risk area during an emergency. This substance will be administered with approval of the State Health Officer from the Department of Health and Hospitals in accordance with State policy. (see Tab 1 to this Chapter).

c. KI will be distributed at the time of an emergency according to established procedures. The OPH cache is a backup supply for emergency workers. Evacuation is the primary means of preventing radiological exposure.

8. Federal emergency workers will provide their own radiological exposure control measures and materials.

9. Parish emergency workers will be provided with dosimeters and other radiological exposure control materials from Parish supplies and augmented by the State, as needed.

C. Decontamination surveys and decontamination procedures for Parish, State and Federal emergency workers will take place at the same sites as those used for the general public unless a specific emergency worker decontamination center is designated.

1. Each emergency worker will be responsible for reporting to a reception center or decontamination center at the conclusion of his/her shift during the emergency.

2. Decontamination for personnel, supplies and equipment will also take place at reception centers or decontamination centers, as per implementing procedures.

3. Provisions for the medical treatment of contaminated emergency workers will take place at the same medical facilities used for the general public.

4. Emergency workers will be responsible for filling out dosimetry report forms at the conclusion of the emergency. These forms (original or copy) will be submitted to LDEQ for permanent retention.

D. Authorization for exceeding U.S. EPA Protective Guidance on Dose Limits for Workers Performing Emergency Services

1. The radiation dose limit, per EPA Guidance, for emergency workers is 5 Rem whole body gamma dose (TEDE). Authorization to exceed this limit shall be obtained from the LDEQ Secretary. Once this limit is reached, appropriate radiological exposure control measures will be implemented as directed by LDEQ. These measures will include, but are not limited to the following:

2. When an exposure of 5 Rem (TEDE) (i.e., considering external exposure and inhalation effects) is reached, emergency workers will be instructed to leave the risk area and to report to a designated monitor site for verification of the reading. If this reading is found to be correct, the activities of the emergency worker in question will be limited to tasks performed outside the risk area unless circumstances indicate the need for emergency assistance.

3. An exposure limit of 10 Rem whole body dose (TEDE) will be applied for emergency workers protecting valuable property. It is assumed that a lower dose is not practicable in this situation.

4. An exposure limit of 25 Rem whole body dose (TEDE) will be applied for emergency workers performing activity involving lifesaving or protection of large population. It is assumed that a lower dose is not practicable in this situation.

5. Whole body dose (TEDE) greater than 25 Rem is only allowed for emergency workers performing activity involving lifesaving or protection of large population. This is only on a voluntary basis to persons fully aware of the risks involved, as provided in EPA Guidance, and other relevant sources.

NOTE 1: Although no specific upper limit is established for thyroid exposure, radioprotective drugs and other measures will be applied to reduce thyroid doses to emergency workers from inhalation of radioiodines. A thyroid dose limit, as appropriate under the situation, may also be applied. (see Chapter 6, Accident Assessment).

NOTE 2: Probable Early Effects of Acute Radiation

Whole Body Doses	
Acute Doses	**Probable Effect**
0 to 25 R	No obvious injury
25 to 50 R	Possible blood changes, but no serious injury
50 to 100 R	Blood cell changes, some injury, no disability
100 to 200 R	Injury, possible disability
200 to 400 R	Injury and disability certain, death possible
400 R	Fatal to 50 %
600 R or more	Fatal

6. In the event that exposures for emergency workers beyond 5 Rem whole body dose (TEDE) are determined to be necessary, authorization for such activities will be made by the principal decision-maker for the involved unit of government.

   a. For Parish emergency workers, the chief executive officer of the Parish will have responsibility for authorizing exposure beyond 5 Rem whole body dose (TEDE).

   b. For LDEQ emergency workers, the LDEQ Secretary will have the responsibility for authorizing exposures beyond the dose limit per EPA Guidance. For all other State agencies, LDEQ Secretary will provide advisory in this regard, either directly or through coordination with the State Emergency Operations Center.

c. An individual with health physics training will be available at the State EOC, the utility's EOF, or LDEQ headquarters to advise the decision-maker for each organization of the biological risk associated with their decision.

7. Criteria to be considered by persons responsible for authorizing emergency worker exposure beyond the emergency PAG level will consist of the following:

   a. The mission involves saving a human life and is the last option available.

   b. The maximum radiological exposure control measures available will be afforded to the emergency workers and duration of exposure in risk areas will be observed to the greatest extent possible.

   c. Emergency workers selected for the mission are volunteers and are fully advised of the potential risk.

VI. Tabs

Tab 1: Radioprotective Drugs

TAB 1 TO CHAPTER 9

Radioprotective Drugs

Potassium Iodide (KI), administered orally, can be used effectively as a thyroid-blocking agent to reduce the accumulation of radioiodine in the thyroid gland. The radioiodine enters the body through inhalation or ingestion. KI is not an adequate substitute for prompt evacuation or sheltering of the general population near a plant for a severe reactor accident. The decision to use KI to protect the public rests with the State and local health authorities.

The LDEQ Secretary (or designee) shall seek the advice of the State Health Officer at the time of an accident to discuss the administration of KI to emergency workers and institutionalized persons. Attending physicians at medical and nursing facilities must approve administration of KI for their patients.

State Policy:

Attachment 1 to Tab 1 to Chapter 9: Policy Statement, USE OF POTASSIUM IODIDE (KI) IN LOUISIANA FOR EMERGENCIES AT FIXED NUCLEAR FACILITIES

Louisiana State KI Supply

LDEQ supplies each briefcase with one pack and each field monitoring team kit two packs of IOSAT, or equivalent, containing 14 - 130 mg tablets each. The supplies are stored at room temperature. Quantities and expiration dates are monitored by the REP&R unit.

Four Office of Public Health (OPH) Parish Health Units – Tensas Parish, Reserve, Luling, and St. Francisville have a cache of KI intended as a backup supply for emergency first responders. For the general public, evacuation is the primary means of preventing radiological exposure. Each OPH has 100 packs of IOSAT with 14 -130 mg tablets each. The offices also maintain a cache of 400 – 30 ml bottles of Thyroshield, with the exception of St. Francisville which maintains 800 – 30 ml bottles.

DHH maintains an inventory of potassium iodide which can be diluted into 15 ml bottles and used during an emergency.

State Level - Pharmacy Services Inventory

Drug Name	Size	Quantity	*	Total 15ml bottles produced	15ml dropper bottles available	15ml dropper bottles needed	Total persons >150lb treated	Total persons <150lb treated
Potassium Iodide	500gm	27	96 - 15ml bottles can be produced from 500gm	2592			130mg (8drops)	65 mg (4drops)
Potassium Iodide	2.5kg	2		960				
				3552	869	2683 or 112 cases of 24	14208	28416
* For 10 days, each 15ml bottle treats:		• 4 persons >150 lbs						
		• 8 persons <150 lbs						

Regional Level - Public Health Units' Inventory

Location/Type	Dosing	Quantity	Total persons >150lb treated	Total persons <150lb treated	EPZ Section/Utility	Total Population	School Population
St Charles							
IOSAT	14 tablet	100	140	280	5mi EPZ Waterford 3		0
Thyroshield KI susp	30 ml	400	600	1200	10 mi EPZ Waterford 3		9333
St John the Baptist							
IOSAT	14 tablet	100	140	280	5mi EPZ Waterford 3	63529	0
Thyroshield KI susp	30 ml	400	600	1200	10 mi EPZ Waterford 3	125997	10599
West Feliciana							
IOSAT	14 tablet	100	140	280	5mi EPZ River Bend	7442	1395
Thyroshield	30 ml	800	1200	2400	10 mi EPZ River Bend	35432	972
Tensas							
IOSAT	14 tablet	100	140	280	5mi EPZ Grand Gulf	890	
Thyroshield	30 ml	400**	600	1200	10 mi EPZ Grand Gulf	8702	
** at regional office							
IOSAT dosing	Over 150lb - 130mg (1 tab), Under 150 lb - 65 mg (1/2 tab) daily for 10 days {children 1 month to 1 year - 1/4 tab (32 mg)}						
Thyroshield dosing	Over 150lb - 130mg (2ml), Under 150lb - 65mg (1ml) daily for 10 days {children 1 month to 3 years - 32mg (0.5ml)}						

During a radiological emergency, an alternate source of potassium iodide equivalent to IOSAT or Thyroshield, may be authorized for use.

ATTACHMENT 1 TO TAB 1, CHAPTER 9

Policy Statement, Use of Potassium Iodide (KI) in Louisiana for Emergencies at Fixed Nuclear Facilities

STATE OF LOUISIANA
DEPARTMENT OF HEALTH AND HOSPITALS

COPY

M. J. "Mike" Foster, Jr.
GOVERNOR

LOUISIANA
Department of HEALTH and HOSPITALS

David W. Hood
SECRETARY

POLICY STATEMENT

USE OF POTASSIUM IODIDE (KI) IN LOUISIANA
FOR EMERGENCIES AT FIXED NUCLEAR FACILITIES

Potassium iodide (KI) is a substance, which can effectively decrease the absorption of radioactive iodides by the thyroid gland. KI will be distributed, as appropriate, at the order of the Secretary or his or her designated person of the Department of Environmental Quality and/or at the order of State Health Officer or his or her designated person of the Department of Health and Hospitals for use by institutionalized persons and emergency workers in the risk area during an emergency at a fixed nuclear facility in accordance with this policy.

The following criteria will be utilized by the above-mentioned individuals to determine the appropriate action:

1. Projected Thyroid Dose

A. For a projected thyroid dose of less than 5 Rems, the use of KI will not be considered; however, circumstances surrounding the incident may indicate that KI be administered as a precautionary measure.

B. At a projected thyroid dose of 5 to 25 Rems, the use if KI will be considered, taking into account such factors as expected duration of the release and possible side effects caused by the use of KI.

C. For a projected thyroid dose of 25 Rems or greater, KI will be administered to emergency workers and institutionalized persons unable to evacuate the affected area quickly.

2. Medical implications and protective factors associated with the administration of KI will be considered. The Secretary of the Department of Environmental Quality or his or her designee will seek the advice of the State Health Officer or his or her designee on this matter at the time of the incident.

3. Incident assessment information, such as the expected duration and type of release, the area affected, decision and implementation times available, and support logistics required will be considered during the decision-making process.

The undersigned concur and agree that this policy represents the best position of the State of Louisiana with regard to administration of KI in the light present knowledge. This policy and agreement will remain in effect until changed by the head of the Department of Environmental Quality and the State Health Officer.

(Signature) (Date) 7-19-95
J. Dale Givens
Secretary, Department of Environmental Quality

(Signature) (Date) 7/12/95
Jimmy Guidry, M.D.
State Health Officer

OFFICE OF PUBLIC HEALTH
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"AN EQUAL OPPORTUNITY EMPLOYER"

ATTACHMENT 2 TO TAB 1, CHAPTER 9

LDHH Potassium Iodide Advisory

GOVERNOR'S OFFICE OF HOMELAND SECURITY
& EMERGENCY PREPAREDNESS

To: State Agencies and Emergency Management Director(s) of the following parish(es):

_____
_____
_____

From:

_____, Director
Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) State Emergency Operations Center (State EOC)

Transmittal Date:_____ **Transmittal Time:**_____hours

The Louisiana Department of Health and Hospitals (LDHH) has issued the following advisory:

On _____ at _____hours, the Louisiana Department of Health and
(date)
Hospitals has authorized the administration of the thyroid blocking drug potassium iodide (KI) to state and local emergency workers responding to the emergency at _____Nuclear Power Plant. This includes all emergency workers identified and designated by the State and/or Parish government(s), who will be performing assigned emergency functions within the plume exposure pathway emergency planning zone within _____miles of the plant.
(no.)
Agencies affected by this advisory should seek the authorization of appropriate officials for administering KI to their emergency workers.

Dose of KI is 1 tablet (130 milligrams) per day by mouth for 10 days for workers 18 years of age or older.

Dose of KI is 1/2 tablet (65 milligrams) per day by mouth for 10 days for workers under 18 years of age.

The Louisiana Department of Health and Hospitals has also authorized the administration of KI to those institutionalized persons who cannot be quickly evacuated from the plume exposure pathway emergency planning zone within _____miles of the plant, in the same dosage as mentioned above.
(no.)
The ingestion of KI is voluntary and KI should not be taken by anyone with a known history of allergy to iodine or iodides. Those taking the drug should read the package insert that comes with the drug.

The policy of the State of Louisiana is to evacuate those persons in the general population residing within the plume exposure pathway emergency planning zone within _____miles of the plant and _____miles downwind of the plant.
(no.) (no.)

Assessment of the need for those evacuated persons to be authorized to take KI will be made after evacuation is accomplished.

Initials: ____ Secretary or Designee, Louisiana Department of Environmental Quality
____ Director or Designee, Governor's Office of Homeland Security and Emergency Preparedness

_____ **(signature required)**
State Health Officer or Designee, Louisiana Department of Health and Hospitals

(Complete dosage chart summary on next page)
********** End of Advisory**********

POTASSIUM IODIDE
Recommended Doses for Different Risk Groups

From FDA June 2002

	Predicted Thyroid Exposure (Rem)	KI dose (mg)	# of 130 mg tablets	# of 65 mg tablets
Adults over 40 yrs	≥ 500	130	1	2
Adults over 18 through 40 yrs	≥ 10			
Pregnant or lactating women	≥ 5			
Adoles. Over 12 through 18 years		65	1/2	1
Children over 3 through 12 yrs				
Over 1 month through 3 yrs		32	1/4	1/2
Birth through 1 month		16	1/8	1/4

CHAPTER 10

Medical and Public Health Services

I. Purpose

To establish concepts for the provision of medical services for the radiation accident patients and continued healthcare needs for patients of healthcare facilities within the plume exposure pathway EPZ of fixed nuclear facilities.

II. Situation

Fixed nuclear facility accidents may create consequences requiring (1) emergency medical transportation for radiation accident patients, and/or "contaminated injured" members of the general public; (2) hospitals capable of providing medical support for radiation accident patients, and/or "contaminated injured" members of the general public; and (3) protective action response for healthcare facilities within the plume exposure pathway EPZ. The term "contaminated injured" means (1) potentially or actually contaminated and otherwise physically injured; or (2) potentially or actually contaminated and exposed to dangerous levels of radiation; or (3) potential or actually exposed to dangerous levels of radiation.

III. Responsibilities

A. Louisiana Department of Environmental Quality will:

1. Provide technical guidance and assistance to hospital emergency departments for the treatment and decontamination of “contaminated injures” persons.
2. Provide technical guidance and assistance to emergency medical personnel for the radiological monitoring and decontamination of ambulance vehicles and equipment used for transport of radiation accident patients.
3. Support the risk Parish offices of emergency preparedness and healthcare facilities with technical advice for protective response.

B. Department of Health and Hospitals, Office of Hospitals, Bureau of Emergency Medical Services

1. Coordinate the relocation of hospital patients from healthcare facilities within the plume exposure pathway EPZ to identified support hospitals.
2. Coordinate and assist in the provision of mass emergency medical transportation resources to be used for the relocation of hospital patients, contaminated injured members of the general public, contaminated injured emergency workers, or contaminated injured fixed nuclear facility personnel.

3. Support the risk Parish offices of emergency preparedness and healthcare facilities with identification and coordination of medical resources for treatment of contaminated injured members of the general public, contaminated injured fixed nuclear facility personnel or contaminated injured emergency workers.

IV. Concept of Operations

A. Emergency Medical Transportation for the Radiation Accident Patients

1. Parish offices of emergency preparedness coordinate response of emergency medical services to provide emergency medical transportation for all affected persons not covered under the facilities' Emergency Medical Assistance Plan. (Tab 1 lists the respective ambulance services available to support this plan.)

2. Parish offices of emergency preparedness, in consultation with LDEQ, will provide assistance to emergency medical personnel for protective actions and monitoring/decontamination of ambulance vehicles and equipment.

B. Medical Services for Radiation Accident Patients

1. A group of hospitals which has the capability to provide appropriate medical services to contaminated injured persons, including members of the general public, has been identified for each nuclear power facility EPZ. (see Tab 2 and Attachments 1, 2, 3.)

2. Emergency medical services personnel involved in the transport of radiation accident patients will provide advance notification to the receiving hospital emergency department.

3. Hospital emergency departments so notified will place into effect the hospital emergency management plan, initiating preparation for receiving, treating and decontaminating the radiation accident patients in accordance with adopted procedures for management of medical emergencies involving radiation.

C. Health Care Facility Protective Response

1. Health care facilities within the plume exposure pathway EPZ have incorporated protective response procedures for fixed nuclear facility accidents into their overall emergency management (disaster) plans. (See plant specific Attachments.)

2. Health care facility response procedures include provisions for protective sheltering, procedures for emergency relocation, and arrangements for satisfying emergency transportation requirements.

3. Parish offices of emergency preparedness will notify health care facilities within the plume exposure pathway EPZ to activate their emergency management plans, advising the health care facility

emergency management coordinator of the emergency action/classification level in effect.

4. Health care facilities will initiate the appropriate response, based on the emergency classification as outlined within the facilities' emergency management plan for fixed nuclear facility accidents.

5. Parish offices of emergency preparedness, in consultation with LDEQ personnel, will recommend to health care facilities at risk whether to shelter or evacuate patients and staff.

6. Parish offices of emergency preparedness, with assistance provided by the Department of Health and Hospitals, Office of Hospitals, Bureau of Emergency Medical Services, will coordinate the relocation of health care facility patients and provide mass emergency medical transportation resources to satisfy health care facility transportation requirements.

7. Support Parish offices of emergency preparedness, with assistance provided by the Department of Health and Hospitals, Office of Hospitals, Bureau of Emergency Medical Services, will assist support health care facilities with the accommodation of patient evacuees.

V. Tabs

Tab 1: Ambulance Services Available for Emergency Medical Transportation in Support of the State of Louisiana Peacetime Radiological Response Plan

Tab 2: Ambulance Procedures

Tab 3: Hospitals Capable of Treating “Contaminated Injured” Personnel

Tab 4: Hospital Capabilities and Procedures

TAB 1 TO CHAPTER 10

Ambulance Services Available for Emergency Medical Transportation in Support of the State of Louisiana Peacetime Radiological Response Plan

Waterford 3 Steam Electric Station	
Parish	**Ambulance Service**
Orleans	Priority Emergency Medical Service P.O. Box 6379 New Orleans, LA 70172 New Orleans Health Department 1300 Perdido Street New Orleans, LA 70112
Jefferson	Medic One Ambulance 639 South Scott Street Metairie, LA 70001 Care Ambulance Service 901 Robert Street Gretna, LA 70056 City of Gretna 200 5th Street Gretna, LA 70053 East Jefferson General Hospital 4200 Houma Boulevard Metairie, LA 70011 West Jefferson Medical Center 1107 Medical Center Boulevard Marrero, LA 70072 Westwego EMS 677 Avenue H Westwego, LA 70094
St. Charles	*St. Charles Hospital Paul Malliard Road Luling, LA 70070

Waterford 3 Steam Electric Station (continued)	
Parish	**Ambulance Service**
Lafourche St. James St. John Tangipahoa Terrebonne	Acadian Ambulance Service P.O. Box 98000 Lafayette, LA 70509
Grand Gulf Nuclear Station	
Tensas	*Northeast Louisiana Ambulance Service St. Joseph, LA
River Bend Station	
East Baton Rouge	* Acadian Ambulance Service P.O. Box 5288 Lafayette, LA 70505 * Emergency Medical Service 3801 Harding Boulevard Baton Rouge, LA 70802
West Baton Rouge	* Acadian Ambulance Service P.O. Box 5288 Lafayette, LA 70505 Iberville Sheriff Parish Prison – Bayou Road Plaquemine, LA
Pointe Coupee	* Acadian Ambulance Service P.O. Box 5288 Lafayette, LA 70505
East Feliciana	* Acadian Ambulance Service P.O. Box 5288 Lafayette, LA 70505
West Feliciana	*West Feliciana Parish Hospital P.O. Box 368 St. Francisville, LA 70775 *Acadian Ambulance Service P.O. Box 5288 Lafayette, LA 70505

* Also capable of transporting contaminated/injured personnel.

TAB 2 TO CHAPTER 10

Ambulance Service Procedures

See the table below for further information regarding:

- specifics of radiological monitoring,
- contamination control measures during transport,
- decontamination techniques, and
- dosimetry for the transport crew

Communications between the transport crew and hospital/medical facility staff will be conducted in accordance with each company's routine communication procedures.

Note: Ambulance personnel are not responsible for the decontamination of the contaminated injured person, whether emergency worker or member of the public. Decontamination will be performed by the hospital or the utility.

Utility	Ambulance Company/Procedures
RBS	Acadian Ambulance Service
	Emergency Medical Service (EMS)/Ambulance Procedure for Response to Radiological Emergencies at River Bend Station
	General Procedure for Ambulance Response to River Bend Station for Medical Emergencies
	West Feliciana Parish Hospital Emergency Medical Service (EMS)
	Emergency Medical Service (EMS)/ Ambulance Procedure for Response to Radiological Emergencies
GGNS	Northeast Louisiana Ambulance Service
	Emergency Medical Service (EMS)/ Ambulance Procedure for Response to Radiological Emergencies
	Emergency Medical Service (EMS)/ Ambulance Procedure for Response to Radiological Emergencies - Checklist
W3	St. Charles Ambulance Service
	St. Charles Parish Hospital Policy & Procedure Manual: Response to an Emergency at Waterford 3/Offsite
	St. Charles Parish Hospital Policy & Procedure Manual: Response to an Emergency at Waterford 3/Onsite

TAB 3 TO CHAPTER 10

Hospitals Capable of Treating Contaminated Injured Personnel

Utility	Facility/Designation
W-3, GGNS	Ochsner Medical Center 1516 Jefferson Highway New Orleans, Louisiana 70121 Designated as a primary hospital for St. John the Baptist and St. Charles Parishes. Designated as a secondary or backup hospital for Tensas Parish.
RBS	Our Lady of the Lake Regional Medical Center 5000 Hennessy Boulevard Baton Rouge, Louisiana 70808 Designated as the secondary or backup hospital for East Baton Rouge, East Feliciana, Pointe Coupee, West Baton Rouge, and West Feliciana Parishes.
GGNS	Riverland Medical Center P.O. Box 111 Ferriday, Louisiana 71334 Designated as the primary hospital for Tensas Parish.
RBS	West Feliciana Parish Hospital Highway 61 St. Francisville, LA 70775 Designated as the primary hospital for the River Bend Parishes.
W-3	West Jefferson Medical Center 4500 Eleventh Street Marrero, Louisiana 70072 Designated as a primary hospital for St. John the Baptist and St. Charles Parishes.

TAB 4 TO CHAPTER 10
Hospital Capabilities and Procedures

	Ochsner [a]	OLOL [b]	Riverland [c]	WFPH [d]	WJMC [e]
Non-Ambulatory Capacity (per day)	532	679	144	23	523
Ambulatory Capacity (per day)	150-300	N/A	N/A	N/A	N/A
Maximum contaminated/non-injured at one time		ER - 1, portable showers available outside	ER - 1, detox building outside	16/hr	
Maximum contaminated/injured or exposed at one time		ER - 1	ER - 1	8/hr	
Time to establish controlled areas		Internal area - 30 min; External area - 60 min		15 min	
Notification Details	See SOP noted in Footnote [a].	See SOP noted in Footnote [b].	See SOP noted in Footnote [c].	See SOP noted in Footnote [d].	See SOP noted in Footnote [e].
Staffing Requirements					
Communication Methods					
Traffic Routing					
Equipment & Personal Protective Equipment					
Decontamination Area Preparation & Diagram					
Monitoring & Decontamination Methods					
Patient Data					
Communication Contact	ED Nurse	Charge Nurse	Charge Nurse	Charge Nurse	ED Charge Nurse
REA Setup Responsibility	REA Setup Team	Director of Nursing	Maintenance	Director of Nursing	REA Coordinator
Emergency Action Level	100 cpm	300 cpm or 0.1 mR/hr	100 cpm	100 cpm	2x background

[a] Ochsner - Ochsner Medical Center – See SOP: Radiation Accident Plan - Procedures for the Decontamination and Treatment of the Radioactively Contaminated Patient for further information

[b] OLOL - Our Lady of the Lake Regional Medical Center – See SOP: Decontamination and Treatment of the Radioactively Contaminated Patient(s) at Our Lady of the Lake Regional Medical Center for further information

[c] Riverland - Riverland Medical Center – See SOP: Hospital Emergency Department Management of Radiation Accidents for further information

[d] WFPH - West Feliciana Parish Hospital – See SOP: Decontamination and Treatment of the Radioactively Contaminated Patient(s) at West Feliciana Parish Hospital for further information

[e] WJMC - West Jefferson Medical Center – See SOP: Decontamination and Treatment of Radioactively Contaminated Patient(s) for further information

CHAPTER 11

Reentry, Recovery, and Return

I. Purpose

To establish the methods used to determine the initiation of reentry and recovery activities and procedures used in support of those activities.

II. Situation

A. Following the initiation of protective actions in the plume exposure or ingestion exposure pathway EPZ of a fixed nuclear facility, LDEQ will continue monitoring and sampling activities to determine the ambient levels of radiation present. The relaxation of protective actions within either EPZ will be considered when radiation levels fall below those limits suggested by the Protective Action Guides (PAGs) and as facility conditions return to normal. Other appropriate criteria may also be applied.

B. Protective actions may be continued or become more restrictive if monitoring and sampling results and projected doses fail to fall within specific intermediate phase relocation PAGs established by EPA.

C. LDEQ will recommend buffer zone to be established around area exceeding EPA PAGs and request the parishes to restrict the area.

D. LDEQ will follow established criteria for recommending temporary reentry into an evacuated area as well as for reaching decisions on decontamination procedures and the disposition of contaminated food products. Responsibilities for supporting the reentry process will be handled by the same agencies and organizations acting in the evacuation.

E. LDEQ will follow established criteria for relaxation of protective actions and recommending return into an evacuated area. Responsibilities for supporting the return process will be handled by the same agencies and organizations acting in the evacuation.

F. LDEQ will follow established criteria for determining areas that will require relocation. Responsibilities for supporting the relocation process will be handled by the same agencies and organizations acting in the evacuation

G. The recovery phase of the operation will commence with the relaxation of the protective action and will extend for a period of time as determined by the severity of and the dislocation caused by the accident.

H. Services provided as part of the recovery phase will include social, health, economic and insurance-related assistance. These services will be handled by officially designated State, Parish and volunteer agencies and

organizations. Federal assistance will be coordinated by the appropriate state agencies.

III. Concept of Operations

A. Based on information provided by the LDEQ Technical Assessment Team and by the facility, the LDEQ Secretary or designee, may recommend protective actions continue or become more restricted.

1. Determination of relocation areas will be based on:

   a. sampling and monitoring results

   b. dose projection models

   c. FRMAC aerial imaging (if available)

   d. EPA relocation PAGs

B. The LDEQ Secretary will finalize any recommendation of a relocation area.

1. The recommendation will be communicated to Parish officials and State support organizations through the same means as used for the initial protective response recommendation.

2. The recommendation will be communicated to the public through the EAS or other emergency communications means as may be necessary.

3. Recommendations affecting the ingestion exposure pathway will be communicated by the Louisiana Department of Agriculture and Forestry, the Louisiana Agricultural Emergency Board and its established USDA network and by the Department of Health and Hospitals.

C. Based on information provided by the LDEQ Technical Assessment Team and by the facility, the LDEQ Secretary or designee will recommend the relaxation of protective actions. Separate recommendations may be made for the plume exposure pathway and ingestion exposure pathway EPZs.

1. Consideration of relaxation of protective actions within the plume exposure pathway EPZ will be based in part on the following:

   a. Ambient levels of radioactivity as compared to the levels during initiation of measures triggered by the PAGs.

   b. Facility conditions and potential for further release of radiological materials.

   c. The continued social and economic cost of disrupted service as compared to the risk to people from exposure that may be caused by such factors as ground contamination.

d. The current ability for State and local agencies to organize resources for the orderly reentry or return of the general public to the evacuated area.

2. Criteria for the consideration of relaxation of protective actions for water, food and animal feed are fully discussed in Chapter 8, Protective Response for the Ingestion Exposure Pathway EPZ. Included as part of these criteria are considerations of withholding food products to other non-hazardous uses or condemnation of these products.

D. The LDEQ Secretary will finalize any recommendation on the relaxation of protective actions.

1. The recommendation will be communicated to Parish officials and State support organizations through the same means as used for the initial protective response recommendation.

2. The recommendation will be communicated to the public through the EAS or other emergency communications means as may be necessary.

3. Recommendations affecting the ingestion exposure pathway will be communicated by the Louisiana Department of Agriculture and Forestry, the Louisiana Agricultural Emergency Board and its established USDA network and by the Louisiana Department of Health and Hospitals.

E. Arrangements for traffic control, security and resource support for the reentry and return operations will be handled in a fashion similar to the initiation of the protective action.

F. LDEQ activities on monitoring, sampling and technical assessment of radiological conditions and consequences will continue until it is determined that no further threat to public health exists.

G. Recovery operations will commence with the relaxation of the protective action. State agencies will discharge responsibilities in accordance with pre-arranged assignments. Any change in the State organizational structure affecting recovery will be communicated through established channels to involved agencies and organizations. Also through the same communication channels, all involved response organizations will be informed of recovery phase plans/procedures being developed, such as remedial measures, how long they will take, and what final outcome is expected.

H. As per prior arrangement, the involved utility will be responsible for the disposal of radiological waste resulting from the accident. LDEQ will provide technical advice to support the efforts of the utility.

I. LDEQ will assess and make recommendations for any necessary long-term decontamination efforts, particularly those with impacts on food products or land use, as part of recovery operations.

J. LDEQ will make a periodic estimate of total population exposure for any accident with off-site radiological impacts.

1. The population dose exposure calculations will include dose rate, projected exposure time and population in the plume area.

2. LDEQ will perform population exposure estimates at regular intervals until background radiation levels in the impacted area return to normal background.

K. LDEQ will coordinate, as necessary, with the appropriate federal agencies and other states on various technical issues and assistance in conjunction with reentry and recovery effort.

L. Other state agencies will, as necessary, coordinate with the appropriate federal agencies and other states on various non-technical issues and assistance in conjunction with reentry and recovery effort.

CHAPTER 12

Training

I. Purpose

To establish guidelines and requirements for a comprehensive radiological emergency response training program for State and local departments and organizations having roles for response to fixed nuclear facility accidents.

II. Situation

A. Off-site emergency response organizations that are responsible to provide assistance and support for on-site emergencies will receive site-specific emergency response training in order to provide timely and effective support on-site.

B. Those State and local personnel who will implement radiological emergency response plans (emergency workers) will receive training for general orientation on the comprehensive emergency preparedness response program, as well as specific instruction on the individual response roles of each emergency worker's organization.

C. Personnel of those key response organizations who will be coordinating their organization's response activities during an accident will receive orientation and training on their assigned functions.

III. Training Programs

A. Response Plan Implementing Personnel

1. GOHSEP, in conjunction with LDEQ, will observe or provide for the training of State and local personnel who will implement radiological emergency response plans (emergency workers).

2. Training for response personnel will be designed to enhance comprehension of the radiological emergency response plans and to orient personnel to their specific response function in relation to the overall protective response.

3. In addition to plan orientation, those response personnel who will conduct activities within the plume exposure pathway EPZ will receive training on radiological exposure control to include respiratory protection, protective clothing, dosimetry, management of total dose through exposure time limitations and other constraints, reading and recording of personnel dose data, decontamination procedures and the use of radioprotective drugs.

4. Personnel who will receive training on radiological emergency response include the following:

a. Directors or coordinators and staff of the response organizations.

b. Accident assessment personnel

c. Radiological monitoring personnel

d. Police security and firefighting personnel

e. First aid and rescue personnel

f. Emergency preparedness personnel

g. Medical support personnel

h. Communications personnel

i. Transportation providers

5. The initial training of response personnel will include an overview of radiological emergency response plans, including the facility, State and Parish plans and procedures, basic information on radiation and radiological protection as well as more specific training on individual organization responsibilities and functions.

6. After the initial training program, retraining of personnel will be accomplished on an annual basis. The scope of the annual retraining programs will be essentially the same as the initial program with modifications based on plan and procedure updates, and the results of exercises and drills.

7. Mini-training sessions on detailed procedural aspects of the radiological emergency preparedness program may be accomplished more frequently by Parish offices of Emergency Preparedness for Parish staffs and local response personnel.

B. Response Organization Personnel

1. LDEQ will provide for the technical training of Department staff who will perform field sampling, sample analysis, accident assessment, dose calculations and protective response evaluations.

2. LDEQ will provide for the training of State department personnel who are assigned to support LDEQ's assessment activities for an accident.

3. GOHSEP will provide for the training of office staff who will coordinate protective response operations of State departments and support to Parish operations.

4. GOHSEP will provide for the training of State Department personnel who are assigned to support State and Parish protective response operations.

5. GOHSEP, in conjunction with LDEQ, will observe or provide for the training of Parish emergency preparedness personnel who will evaluate protective response recommendations and coordinate the implementation of Parish protective response.

6. LDEQ, in conjunction with GOHSEP, will provide for the orientation of response organization personnel from adjacent State(s), who will coordinate assessment and protective response operations for accidents at facilities affecting both Louisiana and the adjacent State(s).

IV. Federal Training Programs

A. The Federal Emergency Management Agency, the Nuclear Regulatory Commission, the Environmental Protection Agency, and the Department of Energy offer several training courses for various aspects of radiological emergency planning, assessment and response.

B. Designated State and Parish personnel responsible for the planning effort will attend these courses, as available, to enhance overall plan development and strengthen specific aspects of response planning requiring detailed technical training.

1. Federal Emergency Management Agency (FEMA) Courses

Courses taken at the Center for Domestic Preparedness (CDP) in Anniston, Alabama are fully funded. Many of the CDP courses are also offered regionally, hosted by various state agencies. These courses receive no federal funding.

a. REP Core Concept Course (RCCC): This course provides an overview of the NRC-licensed nuclear power plant off-site radiological emergency preparedness program. Addresses the REP Program history and sentinel events, federal regulatory policies, basic radiation principles, REP planning guidance (planning standards), REP demonstration guidance (exercise evaluation area) and the REP Disaster Initiated Review (DIR) process.

b. REP Plan Review Course (RPPR): This course focuses on the review of REP emergency plans, specifically the NUREG-0654 planning standards that address the public's health and safety. The revised REP Plan Review Course will include training based on the Comprehensive Preparedness Guide (CPG) – 101, familizationof Hostile Action Based (HAB) plan review, annual plan review and the Annual letter of Certification Review Guide process.

c. Radiological Accident Assessment Concepts (RAAC): Selected LDEQ assessment personnel will attend this course

offered by FEMA. This course addresses radiological consequences of accidents involving radiological materials. This includes accidents or incidents involving commercial power reactors, lost sources, dispersion devices, and transportation. The focus of the course is concepts involved in formulating protective action recommendations following a radiological accident, such as dose quantities, atmospheric dispersion, dose projection, protective action guides, and derived intervention levels.

2. Other Center for Domestic Preparedness (CDP) trainings

Courses held at the CDP facility in Anniston, Alabama are fully funded.

a. Radiological Emergency Response Operations (RERO): This course offers lectures, hands-on training, and team exercises. The lectures include operational-level radiological concepts using guidance and information from the U.S. Department of Homeland Security, Federal Emergency Management Agency, U.S. Nuclear Regulatory Commission, U.S. Department of Energy, and the Environmental Protection Agency. Use of Hands-on training modules will provide students with the knowledge and skills to perform in a radiological emergency response operation.

b. Advanced Radiological Incident Operations (ARIO): This course provides the participants with advanced skills necessary to safely respond to and manage incidents involving radiological hazards. Participants apply these skills in tabletop exercises based on realistic radiological incident scenarios, set within the ICS Structure.

3. Medical Planning and Care in Radiation Accidents: Selected individuals will attend a one-week course designed for physicians who provide medical services to the nuclear industry, as well as city, Parish and State health officers who may be called upon to provide first aid or medical care in the event of a radiation accident. The curriculum includes fundamentals of radiation and radiobiology, radiation detection and measurement, care of radioactively contaminated injuries, evaluation and treatment of internal radioactive contamination, and the acute radiation syndrome. In addition, there will be demonstrations of equipment and facilities used in evaluation and treatment of radiation injuries. The faculty includes experts in handling the medical aspects of radiation accidents.

4. Health Physics in Radiation Accidents: Selected individuals from LDEQ will attend a course for health physicists who may be called

upon to respond to accidents involving radioactive materials and personnel injury. The major topics covered are radiation physics review, principles of radiation detection and internal dosimetry, protective clothing and equipment, radiological emergency procedures, and the role of the health physicist in the medical environment. Lectures will be complemented by demonstrations, laboratory exercises, and a simulated radiation accident drill.

5. Handling of Radiation Accidents by Emergency Personnel: Selected individuals will attend a course for emergency room surgeons and nurses who may be called upon to administer initial hospital aid to a radiation accident victim. This course emphasizes the practical aspects of handling a contaminated victim by discussing the fundamentals of radiation, how to detect and measure it, how to prevent the spread of contamination, how to reduce the radiation dose to the victim and attending personnel, and the role of the medical physicist in caring for contaminated accident victims. Lectures will be complemented by demonstrations, laboratory exercises, and a simulated radiation accident drill.

Note: This selection of courses does not proscribe personnel from attending other programs as they become available.

CHAPTER 13

Exercises and Drills

I. Purpose

To establish concepts for the development of exercises and drills for fixed nuclear facility emergency response, to outline a program for conducting exercises and drills, and to provide for plan improvements based on an evaluation of exercise and drill performance.

II. Situation

A. A regular exercise and drill program is essential to the maintenance of an adequate level of preparedness for response to a fixed nuclear facility emergency.

B. LDEQ will coordinate with GOHSEP and each facility for the scheduling and conduct of exercises and drills for each facility affecting the State.

C. Initial exercises and drills have been conducted for each facility to satisfy licensing requirements. A continuing exercise and drill program will be maintained in order to ensure preparedness for emergency response in accord with 44 CFR 350.

III. Exercises

Exercises will be conducted to test the adequacy of coordination and content of radiological emergency response plans and the procedures established in support of these plans. These exercises will include selected mobilization of State and Parish personnel and resources adequate to verify the capability to respond to an emergency requiring off-site response.

A. LDEQ and GOHSEP will coordinate exercise schedules with each utility so that all objectives that are required to be demonstrated can be completed on an eight-year cycle in accord with current FEMA and NRC guidance and requirements. In general, the State will participate in a full-scale exercise with a nuclear power plant every two years.

1. Biennial full-scale exercises will be conducted on a rotating basis with each of the fixed nuclear facilities within or affecting the State such that the State will participate in one full-scale exercise at least every two years.

2. Ingestion pathway exercises with full participation will be conducted at least once every eight years rotating between RBS and W-3. Participants will be sufficient for carrying out the ingestion measures required by the exercise scenario.

3. Provisions will be made to include Federal agency participation to the fullest extent possible in at least one exercise every eight years.

4. In coordination with the appropriate utility, the State may participate in unannounced and off-hours exercises conducted at least once during each eight-year cycle by the utility.

   a. "Off-hours" includes weekends and the weekday period from 6 P.M. to 4 A.M. FEMA's intent is that the general emergency phase, or the phase when protective actions for the public are implemented, occurs in this period.

   b. "Unannounced" means that knowledge of the exact date is restricted to only those persons with a need to know; a 7-day time frame may be known to all other parties involved.

5. In coordination with the utilities, the State will attempt to conduct exercises during different seasons over an eight-year period.

6. Hostile Action Based (HAB) exercises with full participation will be conducted at least once every eight-year cycle. Participants will be sufficient for carrying out the security measures required by the exercise scenario.

B. The State will partially participate (as defined in 44 CFR 350) with nuclear facilities and Parish governments during "off-year" exercises to satisfy facility and Parish requirements. State participation in these exercises will be sufficient to allow appropriate exercise play by the facility and Parish (as) conducting the exercise. LDEQ will assist in coordination of these exercises but the State's participation in exercise play will be limited.

C. LDEQ will coordinate exercise scheduling and participation with the State of Mississippi for the Grand Gulf Nuclear Station and River Bend Station.

D. Designated representatives from Federal, State and Parish governments will observe and critique full-scale exercises. A critique shall be conducted at the conclusion of each exercise to evaluate the ability of organizations to respond as called for in the plan. Formal evaluations will be prepared by FEMA and submitted to LDEQ and GOHSEP.

E. Observers, controllers and participants will have a separate after-action critique. Comments on areas needing improvement, including emergency plan procedural changes, will be given to the LDEQ REP&R unit for review and implementation.

F. LDEQ REP&R will conduct a thorough review of the Plan, based on the Federal evaluations, and coordinate revision of the Plan and/or implementing procedures as deemed appropriate and necessary to resolve deficiencies or other areas requiring corrective action within the timeframe allowed by FEMA.

IV. Drills

A drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. A drill can be a component of an exercise. Drills will be conducted for various operations as indicated below:

A. Communications Drills

Communications drills will be conducted which test both the adequacy of communications links and response agency understanding of emergency action levels and message content.

1. Communications between each facility, State and Parish governments within the plume exposure pathway EPZs will be tested monthly, or more frequently if so agreed upon.

2. Communications between Federal agencies and States within the ingestion exposure pathway EPZ will be tested quarterly.

3. Communications between each facility, State and Parish government EOCs and field assessment teams will be tested annually.

B. Radiological Monitoring Drills

Radiological monitoring drills will be conducted annually. These drills will include collection and analysis of all sample media (e.g., water, vegetation, soil and air), and provision for communications and record keeping.

1. When possible, LDEQ will coordinate its annual radiological monitoring drill on a rotating basis with that of an operating facility.

2. State participation in these drills will include the dispatch of monitoring teams and the simulated gathering of samples and monitoring data.

C. Health Physics Drills

Health physics drills will be conducted semi-annually in coordination with the nuclear facilities. These drills will involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment.

1. At least one of these drills will be accomplished during participation in exercises with one of the nuclear power plants.

2. These drills will involve LDEQ staff members whose participation is appropriate.

D. Medical Emergency Drills

A medical emergency drill, involving a simulated contaminated individual, which contains provisions for participation by local support services agencies (i.e., ambulance and offsite medical treatment facility) will be conducted annually unless otherwise decided to be conducted more

frequently in which case proper coordination with the evaluating federal agencies will be made. The offsite portions of the medical drill may be performed as part of the required biennial exercise.

1. These medical emergency drills will normally involve the "primary" designated local hospital and an identified emergency medical service (EMS).

2. When the scenario allows full play, the capability of relocation centers to direct "contaminated injured" members of the general public to the appropriate hospital will be tested.

V. Scenarios

The State will develop exercise and drill scenarios based on NRC and FEMA guidance and requirements. Exercises and drills will be designed to allow free play for decision-making by the principal response organizations. Scenarios are expected to include but will not be limited to the following material:

A. The basic objectives of each exercise and drill.

B. The date(s), duration, location(s) and participating organizations.

C. The simulated events.

D. A time schedule of real and simulated initiating events.

E. A narrative summary describing the conduct of the exercises or drills to include such things as simulated casualties, off-site fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities.

F. Arrangements for providing advance materials to official observers.

CHAPTER 14

Agreements

I. Purpose

To establish the basis for the development of letters of agreement with various departments and organizations designated to provide support to radiological emergency response.

II. Situation

A. A fixed nuclear facility accident may create consequences requiring a level of response beyond the capabilities of responsible governmental agencies.

B. Specific areas of response potentially requiring support from Federal, State, Parish and private departments and organizations have been identified throughout the Plan, as well as the particular department or organization that will provide the support.

C. Resources provided by departments of State government to support the State's response to an accident need not be detailed in formal letters of agreement. Implementing procedures developed by departments of State government will detail the support to be provided and the concept of operations that will apply.

D. Resources provided by Parish departments and other local organizations that normally respond to local emergencies (fire, ambulance, police) need not be detailed in letters of agreement. Implementing procedures will be developed detailing the concept of operations that will apply.

E. Resources provided by private organizations and governmental agencies from outside of a jurisdiction impacted by an accident will be detailed in formal letters of agreement.

F. Letters of agreement will be established between fixed nuclear facilities and LDEQ, describing the coordination necessary for effective response to fixed nuclear facility accidents.

III. Letters of Agreement

A. Letters of agreement developed to identify the provision of resource support will detail the resources or emergency measures to be provided, the criteria governing the provision of support, the concept of operations of the department or organization providing the support, and will specify the arrangements for the exchange of information necessary to coordinate the request for and provision of support.

B. Letters of agreement developed between the State and fixed nuclear facilities will identify authorities, responsibilities, arrangements for the

exchange of information during an accident, coordination of emergency public information dissemination and cooperation in plan development, revision and exercises.

IV. Tabs

Tab 1: Letters of Agreement

TAB 1 TO CHAPTER 14

Letters of Agreement*[*]

The following is a list of organizations having agreements with the State of Louisiana in support of the Plan:

- Utility
  - MOU between Entergy, Inc and the Louisiana Department of Environmental Quality
  - MOU between Entergy, Inc. and the Louisiana Governor's Office of Homeland Security
- Reception and Care
  - Baton Rouge River Center
  - Louisiana State University (LSU)
  - American Red Cross
- Emergency Communications
  - Bell South
  - WJBO●WFMF
- Emergency Transportation
  - Capital Area Transportation System (CATS)
- Medical Services
  - Our Lady of the Lake Regional Medical Center
  - Baton Rouge General Medical Center
- Other
  - Baton Rouge Recreation and Park Commission
- Laboratory Services
  - American Radiation Services, International

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[*] LDEQ will maintain a copy of the Letters of Agreement.

Supplement 2: Fixed Nuclear Facilities
to
Louisiana Emergency Operations Plan

Includes:

Attachment 1 - Waterford 3 SES

Attachment 2 - Grand Gulf Nuclear Station

Attachment 3 - River Bend Station