



**FEMA**

February 8, 2012

Mr. Elmo E. Collins, Jr.  
Regional Administrator  
U.S. NRC, Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-4005

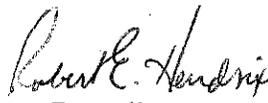
Dear Mr. Collins:

Enclosed is a copy of the radiological emergency preparedness final report for the Waterford 3 Electric Steam Station (W3) exercise evaluated on December 7, 2011, by the U.S. Department of Homeland Security/Federal Emergency Management Agency Region 6. My staff evaluated the plume exposure pathway emergency planning zone around the Waterford 3 Electric Steam Station located near Taft, St. Charles Parish, Louisiana. There were no Deficiencies, one Area Requiring Corrective Action, and no Plan Issues identified during this exercise.

Based on the results of the exercise, the offsite radiological emergency response plans and preparedness for the W3 and the affected local jurisdictions are deemed adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency. Therefore, 44 CFR Part 350 approvals of the offsite radiological emergency response plans and preparedness for the State of Louisiana site-specific to W3 will remain in effect.

A copy of this report was provided to Ms. Lisa Gibney at NRC Headquarters as well as the NRC Headquarters Document Control Desk. Should you have questions, please contact Lisa Hammond, RAC Chair, at (940) 898-5199, or Brad DeKorte, Radiological Emergency Preparedness Site Specialist, at (940) 383-7304.

Sincerely,

  
for Tony Russell  
Regional Administrator

Enclosure

cc: DHS/FEMA Headquarters  
LDEQ – Tim Knight  
GOHSEP – Kevin Davis  
W3 – Greg Fey



Waterford 3 Steam Electric Station

# After Action Report/ Improvement Plan

Exercise Date - December 07, 2011

Radiological Emergency Preparedness (REP) Program



**FEMA**

*Published February 08, 2012*

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# Waterford 3 Steam Electric Station After Action Report/Improvement Plan

*Published February 08, 2012*

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## EXECUTIVE SUMMARY

On December 7, 2011, a biennial Radiological Emergency Preparedness (REP) exercise was conducted in the plume exposure pathway emergency planning zone (EPZ) around the Waterford 3 Steam Electric Station (W 3) located near Taft, St. Charles Parish, Louisiana. The U.S. Department of Homeland Security/Federal Emergency Management Agency (DHS/FEMA) Region VI Office, evaluated the exercise. The purpose was to assess the level of preparedness of state and local responders to react to a simulated radiological emergency at Waterford 3. This exercise was held in accordance with DHS/FEMA policies and guidance concerning the implementation of state and local radiological emergency preparedness plans and procedures.

The previous exercise at this site was a Plume Exercise conducted on June 24, 2009. The qualifying emergency preparedness exercise was conducted on February 8, 1984. There have been eighteen evaluated exercises, including the exercise on December 7, 2011, plus several drills conducted since 1984.

DHS/FEMA Region VI Office, wishes to acknowledge the efforts of the many individuals in the State of Louisiana, St. Charles Parish, St. John the Baptist Parish, and surrounding jurisdictions who participated in this exercise. Protecting the public health and safety is the full-time job of some of the exercise participants and an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork of all the participants was evident during this exercise.

This report contains the final written evaluation of the biennial exercise. The state and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Deficiencies, no Plan Issues and one Area Requiring Corrective Action (ARCA) identified during this exercise.

# SECTION 1: EXERCISE OVERVIEW

## 1.1 Exercise Details

**Exercise Name**

Waterford 3 Steam Electric Station

**Type of Exercise**

Plume

**Exercise Date**

December 07, 2011

**Program**

Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

**Scenario Type**

Radiological Emergency

## 1.2 Exercise Planning Team Leadership

Lisa Hammond

RAC Chair

FEMA Region VI

Technological Hazards Branch Chief

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Federal Planning Team Lead

FEMA Region VI

Technological Hazards Program Specialist

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State Planning Team Lead  
Louisiana Department of Environmental Quality  
Environmental Scientist  
602 N. Fith Street  
Baton Rouge, Louisiana, 70802  
225-219-3627  
greg.gothard@LA.gov

### **1.3 Participating Organizations**

Agencies and organizations of the following jurisdictions participated in the Waterford 3 Steam Electric Station exercise:

#### State Jurisdictions

- Louisiana Governor's Office of Homeland Security and Emergency Preparedness
- Louisiana Department of Environmental Quality
- Louisiana Department of Children and Family Services
- Louisiana Department of Corrections
- Louisiana Department of Health and Hospitals
- Louisiana Department of Transportation Development
- Louisiana Army National Guard
- Louisiana Department of Agriculture and Forestry
- Louisiana Department of Wildlife and Fisheries
- Louisiana State Police
- Louisiana State Fire Marshal

#### Risk Jurisdictions

- St. Charles Parish
- St. Charles Parish Department of Homeland Security
- St. Charles Parish Sheriff's Office
- St. Charles Parish Department of Planning and Zoning

St. Charles Parish Department of Public Works  
St. Charles Parish Department of Water Works  
St. Charles Parish Emergency Medical Services  
St. Charles Parish President's Office  
St. Charles Parish School Board  
Hahnville Fire Department  
St. John the Baptist Parish  
St. John the Baptist Parish Dept. of Public Safety - Homeland Security and  
Emergency Preparedness  
St. John the Baptist Parish Sheriff's Office  
St. John the Baptist Parish Office of Fire Services  
St. John the Baptist Parish Public Works Department  
St. John the Baptist Parish School Board  
St. John the Baptist Parish Utilities Department  
River Parishes Hospital

Support Jurisdictions

American Red Cross

Private Organizations

Entergy Waterford 3 Steam Electric Station

John L Ory Magnet School

WWL- 870 AM Radio Station

Federal Jurisdictions

DHS/ Federal Emergency Management Agency

U.S. Department of Agriculture

National Weather Service

## **SECTION 2: EXERCISE DESIGN SUMMARY**

### **2.1 Exercise Purpose and Design**

The DHS/FEMA Region VI Radiological Emergency Preparedness staff evaluated an exercise on December 7, 2011 to assess the capabilities of state and local emergency preparedness organizations in implementing their Radiological Emergency Response Plans and procedures to protect the public health and safety during a radiological emergency involving Waterford 3 Steam Electric Station (W3). The purpose of this report is to present the results and findings on the performance of the offsite response organizations during a simulated radiological emergency.

### **2.2 Exercise Objectives, Capabilities and Activities**

Exercise objectives and identified Capabilities/REP Criteria selected to be exercised are discussed in the Exercise Plan (EXPLAN), Appendix E.

### **2.3 Scenario Summary**

The exercise scenario was developed to evaluate the response of exercise participants to an incident requiring evacuation of the public from the 10-mile Emergency Planning Zone surrounding the Waterford 3 Steam Electric Station. The exercise scenario provided for the evaluation of St. John the Baptist Parish, St. Charles Parish, Louisiana Department of Environmental Quality and the Governor's Office of Homeland Security and Emergency Preparedness to test the ability of participants to formulate and implement protective action decisions.

## **SECTION 3: ANALYSIS OF CAPABILITIES**

### **3.1 Exercise Evaluation and Results**

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities that participated in the December 7, 2011 exercise evaluation to test the offsite emergency response capabilities of local governments in the 10-mile Emergency Planning Zone surrounding the Waterford 3 Steam Electric Station.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria delineated in the exercise evaluation areas as outlined in the April 25, 2002, Federal Register, Radiological Emergency Preparedness: Evaluation Methodology. Detailed information on the exercise evaluation area criteria and the extent of play agreement used in this drill are found in Appendix E of this report.

### **3.2 Summary Results of Exercise Evaluation**

The matrix presented in Table 3.1 on the following page, presents the status of all exercise evaluation area criteria that were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise criteria are listed by number and the demonstration status is indicated by the use of the following letters:

M - Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercise)

D - Deficiency assessed

A - ARCAs assessed or unresolved ARCAs from previous exercises

P - Plan Issue

N - Not Demonstrated

**Table 3.1 - Summary of Exercise Evaluation**

		GOHSEP EOC	LDEQ HQ	LDEQ EOF	LDEQ FMT 1	LDEQ FMT 2	W3 JIC	St. Charles EOC & T/ACP	St. John the Baptist EOC & T/ACP	St. John the Baptist School Board	WWL	
<p align="center">DATE: 2011-12-07 SITE: Waterford 3 Steam Electric Station, LA M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated</p>												
<b>Emergency Operations Management</b>												
Mobilization	1a1	M	M	M			M	M	M			
Facilities	1b1											
Direction and Control	1c1	M	M	M				M	M			
Communications Equipment	1d1	M	M	M	M	M	M	M	M			
Equip & Supplies to support operations	1e1	M	M	M	M	M	M	M	M			
<b>Protective Action Decision Making</b>												
Emergency Worker Exposure Control	2a1	M		M				M	M			
Radiological Assessment and PARs	2b1	M		M								
Decisions for the Plume Phase -PADs	2b2	M						M	M			
PADs for protection of special populations	2c1							M	M			
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1											
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1							M	M			
<b>Protective Action Implementation</b>												
Implementation of emergency worker exposure control	3a1			M	M	M		M	M	M		
Implementation of KI decision	3b1			M				M	M			
Implementation of protective actions for special populations - EOCs	3c1							M	M			
Implementation of protective actions for Schools	3c2									M		
Implementation of traffic and access control	3d1							M	M			
Impediments to evacuation are identified and resolved	3d2							M	M			
Implementation of ingestion pathway decisions - availability/use of info	3e1											
Materials for Ingestion Pathway PADs are available	3e2											
Implementation of relocation, re-entry, and return decisions.	3f1							M	M			
<b>Field Measurement and Analysis</b>												
Adequate Equipment for Plume Phase Field Measurements	4a1				M	M						
Field Teams obtain sufficient information	4a2			M								
Field Teams Manage Sample Collection Appropriately	4a3				M	M						
Post plume phase field measurements and sampling	4b1											
Laboratory operations	4c1											
<b>Emergency Notification and Public Info</b>												
Activation of the prompt alert and notification system	5a1							A	M		M	
Activation of the prompt alert and notification system - Fast Breaker	5a2											
Activation of the prompt alert and notification system - Exception areas	5a3							M	M			
Emergency information and instructions for the public and the media	5b1						M	M	M			
Mon / decon of evacuees and emergency workers, and registration of evacuees	6a1											
Mon / decon of emergency worker equipment	6b1											
Temporary care of evacuees	6c1											

**Unclassified**

Radiological Emergency Preparedness Program (REP)

After Action Report/Improvement Plan

Waterford 3 Steam Electric Station

Transportation and treatment of contaminated injured individuals	6d1																			
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## **3.3 Criteria Evaluation Summaries**

### **3.3.1 Louisiana Jurisdictions**

#### **3.3.1.1 Louisiana Emergency Operations Center**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.1.2 Louisiana Department of Environmental Quality Headquarters**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.1.3 Louisiana Department of Environmental Quality EOF**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 3.a.1, 3.b.1, 4.a.2.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None

- g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.1.4 Louisiana Department of Environmental Quality Field Monitoring Team One**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.d.1, 1.e.1, 3.a.1, 4.a.1, 4.a.3.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.1.5 Louisiana Department of Environmental Quality Field Monitoring Team Two**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.d.1, 1.e.1, 3.a.1, 4.a.1, 4.a.3.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.1.6 Waterford 3 Joint Information Center**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.d.1, 1.e.1, 5.b.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

### 3.3.2 Risk Jurisdictions

#### 3.3.2.1 St. Charles Parish Emergency Operations Center and Traffic/Access Control Point

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 2.e.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2, 3.f.1, 5.a.3, 5.b.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: 5.a.1.

ISSUE NO.: 70-11-5a1-A-

CRITERION: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite officials to notify the public of an emergency situation. (10 CFR Part 50, Appendix E & NUREG-0654, E.1.,4.,5.,6.,7.)

CONDITION: Sirens and EAS broadcast for the initial Protective Action Decision (PAD) were done simultaneously.

POSSIBLE CAUSE: Program guidance was not followed with regard to sounding the siren and following it with the release of an Emergency Alert System message.

REFERENCE: Interim REP Program Manual, Section I-38  
Memorandum from Kay Goss to Regional Directors, dated 4/2/98 on "Interim-use Guidance for providing information and instructions to the Public for Radiological Emergencies using the New Emergency Alert System (EAS)"

EFFECT: The public could have missed the initial message and protective actions may have been delayed.

RECOMMENDATION: Assure that Emergency Alert System (EAS) message broadcasts follow siren activations within five minutes as required by the REP Program Manual.

- c. DEFICIENCY: None

- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

### **3.3.2.2 St. John the Baptist Parish Emergency Operations Center and Traffic/Access Control Point**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 2.e.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2, 3.f.1, 5.a.1, 5.a.3, 5.b.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

### **3.3.2.3 St. John the Baptist Parish School Board**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 3.a.1, 3.c.2.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

### **3.3.3 Private Organizations**

### **3.3.3.1 EAS Radio Station WWL**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 5.a.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

## **SECTION 4: CONCLUSION**

Based on the results of the exercise, the offsite radiological emergency response plans and preparedness for the State of Louisiana and the affected local jurisdiction are deemed adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency. Therefore, 44 CFR Part 350 approval of the offsite radiological emergency response plans and preparedness for the State of Louisiana site-specific to Waterford 3 Steam Electric Station will remain in effect.

# APPENDIX A: IMPROVEMENT PLAN

<b>Issue Number: 70-11-5a1-A-</b>		<b>Criterion: 5a1</b>	
ISSUE: Sirens and EAS broadcast for the initial Protective Action Decision (PAD) were done simultaneously.			
RECOMMENDATION: Assure that Emergency Alert System (EAS) message broadcasts follow siren activations within five minutes as required by the REP Program Manual.			
CORRECTIVE ACTION DESCRIPTION:			
CAPABILITY:		PRIMARY RESPONSIBLE AGENCY:	
CAPABILITY ELEMENT:		START DATE:	
AGENCY POC:		ESTIMATED COMPLETION DATE:	

## APPENDIX B: EXERCISE TIMELINE

Table 1 - Exercise Timeline

DATE: 2011-12-07, SITE: Waterford 3 Steam Electric Station, LA

Emergency Classification Level or Event	Time Utility Declared	GOHSEP EOC	LDEQ HQ	LDEQ EOF	W3 JIC	St. Charles EOC & T/ACP	St. John the Baptist EOC & T/ACP
Unusual Event	0818	0821	0821	0821		0823	0820
Alert	0920	0933	0934	0935	0942	0932	0932
Site Area Emergency	1014	1017		1026	1024	1020	1014
General Emergency	1219	1230		1219	1229	1227	1228
Simulated Rad. Release Started	1214	1230		1214		1220	1214
Simulated Rad. Release Terminated	N/A						
Facility Declared Operational		1013		1140	1039	0901	0959
Declaration of State of Emergency		1045				1030	1004
Exercise Terminated		1356	1356	1356	1414	1359	1456
1st Protective Action Decision						1310	1310
Siren Activation						1310	1310
1st EAS Message						1310	
KI Administration Decision		1331		1334		1331	1331

Table 1 - Exercise Timeline

DATE: 2011-12-07, SITE: Waterford 3 Steam Electric Station, LA

Emergency Classification Level or Event	Time Utility Declared	WWL
Unusual Event	0818	
Alert	0920	
Site Area Emergency	1014	
General Emergency	1219	
Simulated Rad. Release Started	1214	
Simulated Rad. Release Terminated	N/A	
Facility Declared Operational		
Declaration of State of Emergency		
Exercise Terminated		
1st Protective Action Decision		
Siren Activation		
1st EAS Message		1310
KI Administration Decision		

# APPENDIX C: EXERCISE EVALUATORS AND TEAM LEADERS

DATE: 2011-12-07, SITE: Waterford 3 Steam Electric Station, LA

LOCATION	EVALUATOR	AGENCY
Louisiana Emergency Operations Center	Dan Feighert *Elsa Lopez	FEMA RVIII FEMA RVI
Louisiana Department of Environmental Quality Headquarters	*Dan Feighert	FEMA RVIII
Louisiana Department of Environmental Quality EOF	*Nan Calhoun Jeff Clark	FEMA RVI FEMA RVII
Louisiana Department of Environmental Quality Field Monitoring Team One	*Timothy Pflieger	FEMA RVI
Louisiana Department of Environmental Quality Field Monitoring Team Two	*Joseph Keller	ICFI
Waterford 3 Joint Information Center	*Bill Bischof Rebecca Fontenot Laurel Ryan	FEMA RVI FEMA HQ FEMA RVII
St. Charles Parish Emergency Operations Center and Traffic/Access Control Point	Nan Calhoun Brad DeKorte *Linda Gee Brian Kennedy John Rice Barbara Thomas	FEMA RVI FEMA RVI FEMA RVI FEMA FEMA RI FEMA RI
St. John the Baptist Parish Emergency Operations Center and Traffic/Access Control Point	Larry Broockerd Cara Christianson-Riley *Scott Flowerday Chad Johnston	FEMA HQ FEMA RVII FEMA RVI FEMA RVI
St. John the Baptist Parish School Board	*Patricia Gardner	FEMA - HQ
EAS Radio Station WWL	*Taneeka Hollins	FEMA RI
* Team Leader		

## APPENDIX D: ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AAC	Accident Assessment Coordinator
ALARA	As Low As Reasonably Achievable
ARCA	Area Requiring Corrective Action
ASC	Assistant Section Chief
CDE	Committed Dose Equivalent
DHH	Department of Health and Hospitals
DRD	Direct Reading Dosimeter
EAL	Emergency Alert Level
EAS	Emergency Alert System
ECL	Emergency Classification Level
EMD	Emergency Management Director
EOC	Emergency Operations Center
EOCD	Emergency Operation Center Director
EOF	Emergency Operations Facility
EPA	Environmental Protection Agency
EPD	Emergency Preparedness Director
EPZ	Emergency Planning Zone
EW	Emergency Worker
FMT	Field Monitoring Team
FTC	Field Team Coordinator
GE	General Emergency
GOHSEP	Governor's Office of Homeland Security and Emergency Preparedness
GPS	Global Positioning System
HOO	Headquarters Operations Officer
HQ	Headquarters
IRT	Initial Response Team
JIC	Joint Information Center
KI	Potassium Iodide
LDEQ	Louisiana Department of Environmental Quality
LGC	Logistics Coordinator
ORO	Outside Response Organization
OSL	Optically Stimulated Luminescent
PA	Public Address
PAD	Protective Action Decision

PAG	Protective Action Guide
PAR	Protective Action Recommendation
PAS	Protective Action Sections
PIO	Public Information Officer
REDAM	Radiological Emergency Dose Assessment Model
REP	Radiological Emergency Program
RO	Radiological Officer
SAE	Site Area Emergency
SCP	St Charles Parish
SCPEOC	Saint Charles Parish Emergency Operations Center
SEL	Senior EOF Liaison
SJBP	St. John the Baptist Parish
TLD	Thermoluminescent Dosimeter
UCG	Unified Command Group
UE	Unusual Event
W3	Waterford 3 Electric Steam Station

## **APPENDIX E: EXERCISE PLAN**

**STATE OF LOUISIANA**

**OFFSITE SCENARIO**

**FOR**

**WATERFORD 3 STEAM ELECTRIC STATION**

**December 7, 2011**

**Participating Organizations**

**State of Louisiana**  
**St. Charles Parish**  
**St. John the Baptist Parish**

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## ACRONYMS

AAC	-	Accident Assessment Coordinator
ADS	-	Administrative Support
BKG	-	Background
CAS	-	Central Alarm Station
CEDE	-	Committed Effective Dose Equivalent
DAC	-	Dose Assessment Coordinator
DOE	-	US Department of Energy
DWD	-	Downwind Distance
EAL	-	Emergency Action Level
EOC	-	Emergency Operations Center
EOF	-	Emergency Operations Facility
EPA	-	US Environmental Protection Agency
EPZ	-	Emergency Planning Zone
ERDS	-	Emergency Response Data System
ERF	-	Emergency Response Facility
EW	-	Emergency Worker
FEMA	-	Federal Emergency Management Agency
FMT	-	Field Monitoring Team
GE	-	General Emergency
GLCMR	-	Ground Level Closed Meter Reading
GLOMR	-	Ground Level Open Meter Reading
GOHSEP	-	Governor's Office of Homeland Security & Emergency Preparedness
HOO	-	Headquarters Operations Officer
HPCS	-	High Pressure Core Spray

HQ	-	Headquarters
IRT	-	Initial Response Team
ISCTOT	-	Iodine Sample Background Total Count
JIC	-	Joint Information Center
KI	-	Potassium Iodide
LDEQ	-	Louisiana Department of Environmental Quality
LLEA	-	Local Law Enforcement Agency
NOUE	-	Notice of Unusual Event
NRC	-	US Nuclear Regulatory Commission
PAG	-	Protective Action Guideline
PAR	-	Protective Action Recommendation
PIO	-	Public Information Officer
RCS	-	Reactor Coolant System
REP&R	-	Radiological Emergency Planning & Response
SAE	-	Site Area Emergency
SAS	-	Secondary Alarm Station
SEC	-	LDEQ Secretary's Designee
SEL	-	Senior EOF Liaison
SEOC	-	State EOC
SSS	-	Security Shift Supervisor
T/ACP	-	Traffic/Access Control Point
TEDE	-	Total Effective Dose Equivalent
TRP	-	State EOC Technical Representative
TSC	-	Technical Support Center
WLCMR	-	Waist Level Closed Meter Reading

WLOMR - Waist Level Open Meter Reading

WO - Worker Order

## SCHEDULE OF EVENTS

### Monday, December 05, 2011

1:00 pm - MYU Helicopter Out-of-Sequence demonstration

### Tuesday, December 06, 2011

2:00 pm-- Out-of-State Controller briefing  
W3 Visitors Center

3:00 pm - FEMA, State, Utility briefing  
W3 Visitors Center

### Wednesday, December 07, 2011

8:00 am - W3 Evaluated Exercise  
LDEQ, Baton Rouge, LA  
State EOC, Baton Rouge, LA  
St. Charles EOC, Hahnville, LA  
St. John the Baptist EOC, LaPlace, LA  
JIC, Algiers, LA  
Waterford 3 Steam Electric Station, Taft, LA  
WWL Radio Station, New Orleans, LA

3:00 pm - Relocation Re-entry and Return  
St. Charles EOC, Hahnville, LA  
St. John the Baptist EOC, LaPlace, LA

### Thursday, December 08, 2011

10:00 am - Federal/State/Local Exercise Summary Meeting  
St. John the Baptist EOC, LaPlace, LA

11:30 am - Public Meeting  
Joel McTopy Council Chambers, Percy Hebert Building,  
1801 Airline Highway, LaPlace, LA

## NARRATIVE SUMMARY

### A. Initial Conditions

The plant is operating at 100% power for the past 250 days and is at the middle of core life. RCS Boron is 865 ppm. BAMT 'A' is at 5850 ppm. BAMT 'B' is at 5725 ppm. ESI is +0.016. The 'AB' Bus is aligned to the 'A' side. Protected Train is 'B'. The Operations Spotlight issues are (will be taken from actual Operations turnover data). Approximately 60 gallons of PMU addition will be required to maintain 100% power over the next 12 hours. The sky is cloudy and scattered thunderstorms are predicted for Southeastern Louisiana. Currently there is no precipitation.

### B. Summary of Events

At 07:55 the exercise will commence.

At 08:05, the NRC notifies the site Operations and Security departments of the terrorist threat to Waterford 3. Security personnel establish and maintain heightened awareness. Operations Shift Manager notifies CAS/SAS of credible security threat. CAS/SAS notifies the Security Shift Supervisor (SSS), the SSS then notifies the Security Manager and Local Law Enforcement Agencies (LLEA).

The Shift Manager declares an Unusual Event on HU1, EAL #2, Confirmed security event which indicates a potential degradation in the level of safety of the plant. The emergency condition is announced to station personnel. State and local government agencies, Waterford 1 and 2 and the NRC are notified. There are no Protective Action Recommendations. There is no offsite radiological release at this time.

At 08:07 the plant will experience a SUPS malfunction. Control Room Annunciator D chassis Window U4 "SUPS SA TROUBLE" (window D1204) is energized. A NAO should be dispatched to investigate the annunciator alarm. SUPS A loads will remain energized. The failure should be determined to Diode D4 and Fuse F2. A repair team should be assembled to troubleshoot the failure and initiate corrective action.

At 08:13 the Control Room receives fire alarm at address 021-009, Feedwater Pump Turbine A. The Control Room staff should send a NAO to investigate the

alarm while reviewing applicable Technical Specifications. The NAO will find no indications of fire in the area. The Control Room should reset the alarm and the alarm will clear.

At 08:23 the Control Room receives indication of failure of loop 1A safety pressurizer pressure indicator RC-IPT-0102B. Control Room Annunciator K, CP-2, Reactor Control Panel Window A16 "RPS CHANNEL TRIP PZR PRESSURE LO" and Annunciator K CP-2 Reactor Control Panel Window C16 "PZR PRESSURE LO PRETRIP B/D." A NAO may be dispatched to LCP-43 to verify RC-IPI-0102-B1 failed low. Control Room staff should evaluate Technical Specification and enter Tech Spec 3.3.1 and 3.3.2, and take the necessary actions to bypass channel "A" RPS.

At 08:47, the Control Room receives indication of a 55 gallon per minute Primary Coolant Leak with Equilibrium Charging flow greater than the combined Letdown and Reactor Coolant Pump Controlled Bleedoff flow combined with Condenser Offgas and N-16 radiation monitor indication increase. The Control Room evaluated Off-Normal Procedures OP-901-202, Steam Generator Tube Leakage or High Activity. The crew will start a plant shut down and be offline in approximately 1 to 2 hours. The Shift Manager declares an Alert based on Emergency Plan Implementing Procedures EP-001-001, Recognition and Classification of Emergency Conditions, FA1, "ANY Potential Loss of RCS, Unisolable RCS leak > 44 gpm (RCB1)." The Control Room attempts to locate the source of the leak. The Load Dispatcher will inform Waterford 3 that the grid is slightly unstable at this point and a controlled shutdown would be advisable.

At 09:02 a leak develops downstream of High Pressure Safety Injection Pump "A" suction flange. Control Room Annunciator K, CP-8, Engineered Safeguard Panel M Window N10 "SAFEGUARD PUMPS AREA SUMP PUMP RUNNING." A NAO is dispatched to investigate the Safeguards sump room alarm. The suction of the High Pressure Safety Injection Pump should be isolated and a repair team assembled to repair the leak. Radiation Protection personnel should take actions to control the spread of contamination.

At 09:22 Essential Chiller "A" indicates tripped. Control Room Annunciator Panel K, CP-33 Window D02 "CHILLER A FAILURE." A NAO should be dispatched to investigate Chiller "A." Upon arrival the NAO will find that the chiller has tripped on low flow. A repair team should be dispatched to repair the failure. The Control Room staff should review Technical Specifications and enter appropriate actions.

At 09:51 Containment Spray pump A CCW flow alarm is received. Control Room Annunciator Panel M, CP-8, Engineered Safeguard Window C04 "Cntmt Spray Pump A Brng Water Flow Lo." This is the result of a failed flow transmitter. A repair team should be assembled to investigate the failure and initiate repair.

At 10:16, the "A" charging pump trips due to an ECS/SST internal failure. The Control Room enters OP-901-112, Charging and Letdown Malfunction, and requests a repair team to investigate the failure. The Control Room evaluates Technical Specification 3.1.2.4 and TRM 3.1.2.4. The ECS/SST must be replaced to restore the charging pump to service.

At 10:21, the plant experiences a "2B" RCP shaft seizure. The automatic Reactor Trip fails and a manual trip is unsuccessful. The Control Room de-energizes the 3A31 and 3B31 feeder breakers to shutdown the reactor. The Control Room implements OP-902-000, Standard Post Trip Actions. The loss of flow caused by the RCP shaft seizure combined with the failure of the reactor automatic trip function results in damage to the fuel cladding and an increase in Reactor Coolant System (RCS) activity as indicated by radiation monitor alarms. The Control Room should request Chemistry to draw a RCS sample.

When Chemistry places the primary sample panel on recirculation, radiation levels will indicate that fuel cladding damage has occurred. The Emergency Director declares a Site Area Emergency based on Emergency Plan Implementing Instruction EP-001-001, Recognition and Classification of Emergency Conditions, Initiating Condition SS3, Automatic trip fails to shutdown the reactor and manual actions taken from the reactor control console are not successful in shutting down the reactor, EAL #1, or FS1, "Loss or Potential Loss of ANY two Barriers," EALs FCB1 or FCB3 or FBC4 and RCB1 or RCB3. There are no Protective Action Recommendations (PARs) required at this time.

The Emergency Director selects an offsite assembly area and announces a site evacuation. The Assembly Area Supervisor is dispatched and Security performs accountability in accordance with EP-002-190, Personnel Accountability. For the purposes of this exercise, the non-essential personnel in the Protected Area evacuate to station parking lots and a small number of pre-designated personnel evacuate to the selected offsite assembly area.

At 11:03, an instrument air leak occurs on the header downstream of IA-113B. Instrument air pressure drops to approximately 80 psi. The Instrument Air leak will be discovered in the Reactor Auxiliary Building. The instrument air to station air cross connect should open, but does not due to a failed pneumatic relay in the

valve controller. The Control Room enters OP-901-511, Instrument Air Malfunction. Operations may secure the "B" instrument air compressor and close IA-114B to restore header pressure. Mechanical maintenance should be dispatched to repair the header leakage and I&C maintenance should be dispatched to repair the cross connect valve. Both failures must be fixed to restore instrument air to normal operation. Operations may elect to open the bypass (SA127) to supply instrument air.

At 11:26, EFW Pump 'A/B' trips on overspeed. Annunciator A-10 on CP-8 indicating "EFW Flow Hi-Hi." A NAO should be dispatched to investigate the problem with the EFW Pump. The mechanical overspeed trip device on the Emergency Feedwater Terry Turbine trips, closing the turbine stop valve. Mechanical maintenance investigates the problem and finds a sheared poppet stem. The poppet stem must be replaced to restore the turbine to operation.

At 11:40, annunciators H-6 and K-7 are received on CP-35 indicating a ground on the 3A21 electrical bus. The TSC will dispatch a repair team to investigate the problem. The ground is traced to a Start-Up Transformer "A" fan transformer.

At 12:12 Atmosphere Dump Valve "A" receives an open signal, opens and then will not close. The PAC system gives the valve a straight demand signal causing the valve to go fully open. The Emergency Director declares a General Emergency based on Emergency Plan Implementing Instruction EP-001-001, Recognition and Classification of Emergency Conditions, Initiating Condition FG1 (EALs FCB2 or FCB6, and RCB2 or RCB6, and CNB4 or CNB7), "Loss of ANY two Barriers AND Loss or Potential Loss of Third Barrier or AG1 (EAL#1 or EAL#2), "Offsite dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000mR TEDE or 5000mR CDE Thyroid for the actual or projected duration of the release using actual meteorology." Initial Protective Action Recommendations of evacuation of Protective Response Areas A1, B1, C1, D1 (2-mile radius), A2 and C2 (5 miles downwind) and sheltering for the remainder of the Protective Response Areas in the 10-mile EPZ are made. There is an offsite radiological release at this time above Federal limits.

When notification for the change in PARs is completed, in the opinion of the Lead Controller, the drill objectives have been sufficiently demonstrated and continuing the drill will provide no additional benefit, the drill will be terminated.

This decision will be coordinated with LDEQ. When the exercise is terminated, area critiques will be conducted.

## **ATTACHMENT A**

### **OFFSITE OBJECTIVES**

## I. EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

### A. Sub-element 1.a – Mobilization

**Criterion 1.a.1: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654, A.4; D.3, 4; E.1, 2; H.4)**

#### Locations

State Emergency Operations Center (State EOC), LDEQ Headquarters (LDEQ HQ), LDEQ Emergency Operations Facility (LDEQ EOF), Joint Information Center (JIC), St. Charles Parish EOC, St. John the Baptist Parish EOC

### B. Sub-element 1.c - Direction and Control

**Criterion 1.c.1: Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654, A.1.d; A.2.a, b)**

#### Locations

State EOC, LDEQ HQ, LDEQ EOF, St. Charles Parish EOC, St. John the Baptist Parish EOC

### C. Sub-element 1.d – Communications Equipment

**Criterion 1.d.1: At least two communication systems are available, at least one operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations. (NUREG-0654, F.1, 2)**

#### Locations

State EOC, LDEQ HQ, LDEQ EOF, LDEQ Field Monitoring Team 1 (FMT 1), LDEQ FMT 2, JIC, St. Charles Parish EOC, St. John the Baptist EOC

### D. Sub-element 1.e – Equipment and Supplies to Support Operations

**Criterion 1.e.1: Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654, H.7; J.10.a, b, e; J.11; K.3.a)**

Locations

State EOC, LDEQ HQ, LDEQ EOF, LDEQ Field Monitoring Team 1 (FMT 1), LDEQ FMT 2, JIC, St. Charles Parish EOC, St. John the Baptist Parish EOC

**II. EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING**

**A. Sub-element 2.a – Emergency Worker Exposure Control**

**Criterion 2.a.1: OROs use a decision-making process, considering relevant factors and appropriate coordination, to insure that an exposure control system, including the use of KI, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654, K.4; J.10.e, f)**

Locations

State EOC, LDEQ EOF, St. Charles Parish EOC, St. John the Baptist Parish EOC

**B. Sub-element 2.b. - Radiological Assessment and Protective Action Recommendations and Decisions for the Plume Phase of the Emergency**

**1. Criterion 2.b.1: Appropriate protective action recommendations are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of on-site and off-site environmental conditions. (NUREG-0654, I.8, 10 and Supplement 3)**

Locations

State EOC, LDEQ EOF

**2. Criterion 2.b.2: A decision making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PAD) for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654, J.9; J.10.f, m)**

Locations

State EOC, St. Charles Parish EOC, St. John the Baptist Parish EOC

**C. Sub-element 2.c - Protective Action Decisions Consideration for the Protection of Special Populations**

**Criterion 2.c.1: Protective action decisions are made, as appropriate, for special population groups. (NUREG-0654, J.9; J.10.d, e)**

Locations

St. Charles Parish EOC, St. John the Baptist Parish EOC

**D. Sub-element 2.e – Radiological Assessment and Decision-Making Concerning Relocation, Reentry, and Return**

**Criterion 2.e.1: Timely relocation, reentry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures (NUREG-0654, I.10; J.9; M.1)**

Locations

St. Charles Parish EOC, St. John the Baptist EOC

**III. EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION**

**A. Sub-element 3.a – Implementation of Emergency Worker Exposure Control**

**Criterion 3.a.1: The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. (NUREG-0654, K.3.a, b)**

Locations

LDEQ FMT 1, LDEQ FMT 2, St. Charles Parish EOC, St. John the Baptist Parish EOC, St. John the Baptist Parish School

**B. Sub-element 3.b. – Implementation of KI Decision**

**Criterion 3.b.1 – KI and appropriate instructions are available should a decision to recommend to use KI be made. Appropriate record-keeping of the administration of KI for emergency workers and institutionalized individuals is maintained. (NUREG-0654, J.10.e)**

Locations

LDEQ EOF, St. Charles Parish EOC, St. John the Baptist Parish EOC

**C. Sub-element 3.c. – Implementation of Protective Actions for Special Populations**

1. **Criterion 3.c.1 – Protective action decisions are implemented for special populations other than schools within areas subject to protective actions.**

Locations

St. Charles Parish EOC, St. John the Baptist Parish EOC

2. **Criterion 3.c.2 – OROs/School officials implement protective actions for schools. (NUREG-0654, J.10.c, d, g)**

Locations

St. John the Baptist Parish School

**D. Sub-element 3.d. – Implementation of Traffic and Access Control**

1. **Criterion 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654, J.10.g, j)**

Locations

St. Charles Parish EOC, St. Charles Parish T/ACP, St. John the Baptist Parish EOC, St. John the Baptist Parish T/ACP

2. **Criterion 3.d.2: Impediments to evacuation are identified and resolved. (NUREG-0654, J.10.k)**

Locations

St. Charles Parish EOC, St. Charles Parish T/ACP, St. John the Baptist Parish EOC, St. John the Baptist Parish T/ACP

**E. Sub-element 3.f – Implementation of Relocation, Reentry, and Return Decision**

**Criterion 3.f.1: Decisions regarding controlled reentry of emergency workers and relocation and return of the public are coordinated with appropriate organizations and implemented. (NUREG-0654, M.1, 3)**

Locations

St. Charles Parish EOC, St. John the Baptist EOC

**IV. EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS**

**A. Sub-element 4.a – Plume Phase Field Measurement and Analysis**

- 1. Criterion 4.a.1: The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates. (NUREG-0654, H.10; 1.7, 8, 9)**

Locations

LDEQ FMT 1, LDEQ FMT 2

- 2. Criterion 4.a.2: Field teams are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654, H.12; I.8, 11; J.10.a)**

Locations

LDEQ EOF

- 3. Criterion 4.a.3: Ambient radiation measurements are made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams will move to an appropriate low background location to determine whether any significant (as specified in the plan and/or procedures) amount of radioactivity has been collected on the sampling media. (NUREG-0654, I.9)**

Locations

LDEQ FMT 1, LDEQ FMT 2

**V. EVALUATION AREA 5: EMERGENCY NOTIFICATION & PUBLIC INFORMATION**

**A. Sub-element 5.a – Activation of the Prompt Alert and Notification System**

- 1. Criterion 5.a.1: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The initial instructional message to the public must include as a minimum the elements required by current FEMA REP guidance. (10 CFR Part 50, Appendix E.IV.D & NUREG-0654, E.5, 6, 7)**

Locations

St. Charles Parish EOC, St. John the Baptist EOC, WWL Radio Station

- 2. Criterion 5.a.3: Activities associated with FEMA approved exception areas (where applicable) are completed within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. Backup alert and notification of the public is completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system (NUREG-0654, E.5, 6; G.3.a, G.4.c)**

Locations

St. Charles Parish EOC, St. John the Baptist EOC

**B. Sub-element 5.b – Emergency Information and Instructions for the Public and the Media**

- Criterion 5.b.1: OROs provide accurate emergency information and instructions to the public and the news media in a timely manner. (NUREG-0654, E.5, 7; G.3.a, G.4.c)**

Locations

JIC, St. Charles Parish EOC, St. John the Baptist Parish EOC

**ATTACHMENT B**  
**EXERCISE TIMELINE**

### Exercise Timeline

Note: all times are approximate

0755 Exercise begin

0805 Notice of Unusual Event declared

0847 Coolant leak begins

0847 Alert declared

1021 Reactor trip

1021 Site Area Emergency declared

1140 Release begins

1212 General Emergency declared

1430 Exercise termination

## **ATTACHMENT C**

### **METEOROLOGICAL DATA**

## METEOROLOGICAL SCENARIO OUTLINE AND DATA

The meteorological scenario selected for the Waterford 3 SES December Exercise has been prepared to meet the overall objectives of the drill.

The meteorological scenario assumes the following:

- At 8:10, due to a security condition, wind from south (185 degrees) at approximately 8 miles per hour at the meteorological towers and moderately stable meteorological conditions (Stability Class F).
- At 10:00, the wind is from the south (185 degrees) at 7.84 miles per hour (3.5 m/sec) and moderately stable meteorological conditions (Stability Class F).

The choice of this meteorology provides for the desirable measurable levels of radiation downwind to meet offsite objectives.

The meteorological data presented in this section includes:

1. Simulated general forecasts from the National Weather Service
2. Simulated computer printouts from the plant's meteorological system.

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