



# AFTER ACTION REPORT

**(FINAL)**

**October 6, 2010**

**Radiological Emergency Preparedness Program (REPP)**



**FEMA**

*Published January 21, 2011*

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# Homeland Security Exercise and Evaluation Program (HSEEP)

**AAR**

**2010 Crystal River Nuclear Power Plant REP Exercise**

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ADMINISTRATIVE HANDLING INSTRUCTIONS

1. This After Action Report (AAR) for the 2010 Crystal River Nuclear Power Plant Radiological Emergency Preparedness, Plume Phase Emergency Planning Zone Exercise is to be considered a public document.
2. Points of Contact:

Federal

Mr. Randall Hecht  
South Section Chief  
FEMA Region IV  
3003 Chamblee-Tucker  
Atlanta, Georgia 30341-4122  
770/220-3147  
randall.hecht@dhs.gov

State of Florida

Mr. W. Tracy Poole  
REP Manager  
Florida DEM  
2555 Shumard Oak Blvd.  
Tallahassee, Florida 32399  
229/413-2398  
William.Poole@em.myflorida.com

Progress Energy:

Mr. Charles Poliseno  
Emergency Preparedness Supervisor  
8200 W. Venable Street  
NU 47  
Crystal River, Florida 34429  
352/563-4522  
charles.poliseno@pgnmail.com

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## EXECUTIVE SUMMARY

On October 6, 2010, the Department of Homeland Security, Federal Emergency Management Agency (FEMA) Region IV, Radiological Emergency Preparedness (REP) Program staff evaluated a plume exposure pathway exercise in the emergency planning zone (EPZ) around the Crystal River Nuclear Power Plant (CRNPP). CRNPP is located approximately 7.5 miles northwest of Crystal River, Florida and is operated by Progress Energy. The emergency planning zone (EPZ) is divided into three emergency response zones encompassing parts of Citrus and Levy Counties with a resident population of approximately 19,370.

FEMA's overall objective of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency at CRNPP. This exercise was conducted in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans and procedures. The previous federally evaluated exercise at this site was conducted on April 1, 2008. The qualifying emergency preparedness exercise was conducted March 10 and 11, 1982.

The purpose of this report is to analyze exercise results (identify strengths to be maintained and built upon, identify potential areas for further improvement) and support development of corrective actions.

The State of Florida's specific objectives for the 2010 CRNPP REP Exercise were as follows:

- **Objective 1:** Demonstrate the ability to provide emergency operations center (EOC) management including direction and control through the State and counties EOC Multi-Agency Coordination Center System (MACCS).
- **Objective 2:** Demonstrate the ability to provide protective action decision-making for State and County emergency workers and the general public through exercise play and discussions of plans and procedures.
- **Objective 3:** Demonstrate the ability to physically implement protective actions for State and County emergency workers and the general public through exercise demonstration and discussion of plans and procedures.
- **Objective 4:** Demonstrate the ability to activate the Prompt Alert and Notification System through exercise play.
- **Objective 5:** Demonstrate the effectiveness of plans, policies and procedures in the emergency news center (ENC) for joint (public and private sector) emergency information communications.

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These objectives were developed to meet the REP program requirements, encompass the REP Program evaluation area criteria, and are based on the negotiated Extent of Play Agreement.

FEMA has provided Areas for Improvement to the State of Florida under separate cover as a For Official Use Only (FOUO) document in compliance with the Homeland Security Exercise and Evaluation Program (HSEEP) standards.



## SECTION 1: EXERCISE OVERVIEW

### 1.1 Exercise Details

#### Exercise Name

2010 Crystal River Nuclear Power Plant Radiological Emergency Preparedness (REP)  
Evaluated Exercise

#### Type of Exercise

Full-Scale Exercise

#### Exercise Out of Sequence/Off Scenario Dates

October 4 and 5, 2010

#### Exercise Date

October 6, 2010

#### Locations

See App. D for a complete listing of locations of supported exercise activities.

#### Sponsors

**Florida Division of Emergency Management**  
2555 Shumard Oak Boulevard  
Tallahassee, Florida 32399

**Progress Energy**  
8200 W. Venable Street  
NU 47  
Crystal River, Florida 34429

#### Program

FEMA Radiological Emergency Preparedness (REP) Program

#### Mission

Response

#### Capabilities

- Emergency Operations Center Management
- Emergency Public Information and Warning
- Citizen Evacuation and Shelter in Place
- Emergency Public Safety and Security Response
- Hazardous Materials Response and Decontamination

#### Scenario Type

Radiological Emergency Preparedness, Plume Phase EPZ

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### 1.2 Exercise Planning Team Leadership

See App. E for a listing of the members of the exercise planning team leadership.

### 1.3 Participating Organizations

The following agencies, organizations, and units of government participated in the 2010 CRNPP REP Exercise.

|  |
|--|
| <b>State of Florida</b>  |
| Division of Emergency Management   |
| <ul style="list-style-type: none"><li>• Technological Hazards</li><li>• Radiological Emergency Planning</li></ul>  |
| Department of Health   |
| <ul style="list-style-type: none"><li>• Bureau of Radiation Control</li></ul>  |
| Department of Law Enforcement  |
| Florida Highway Patrol   |
| Florida Fish and Wildlife Commission   |
|  |
| <b>Risk Jurisdictions</b>  |
| Citrus County, Florida   |
| <ul style="list-style-type: none"><li>• Board of County Commissioners</li><li>• Sheriff's Office</li><li>• Sheriff's Office Emergency Management</li><li>• Public Safety Communications Center (911)</li><li>• Health Department</li><li>• School Board</li><li>• Transportation Department</li><li>• Public Works</li><li>• Animal Services</li><li>• Community Emergency Response Team (CERT)</li><li>• Department of Community Services</li><li>• Nature Coast Volunteer Center</li></ul> |
| Levy County, Florida   |
| <ul style="list-style-type: none"><li>• Department of Emergency Management</li><li>• County Administrator</li><li>• Public Safety Communications Center (911)</li><li>• Sheriff's Office</li><li>• School Board</li><li>• Transportation Department</li><li>• Road Department</li><li>• County Fire Rescue</li><li>• Health Department</li><li>• Community Emergency Response Team (CERT)</li></ul>  |

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|--|
| • City of Williston  |
| • Fire Department  |
| <b>Non-Governmental Organizations</b>  |
| Amateur Radio Emergency Services (ARES)/Radio Amateur Civil Emergency Services (RACES) |
| American Red Cross (ARC), North Central Florida Chapter and Coast to Coast Chapter     |
| Progress Energy  |
| Salvation Army   |
| Seven Rivers Regional Medical System   |
| Citrus Memorial Health System  |
| <b>Federal Organizations</b>   |
| None   |

## SECTION 2: EXERCISE DESIGN SUMMARY

### 2.1 Exercise Purpose and Design

DHS/FEMA administers the Radiological Emergency Preparedness (REP) Program pursuant to the regulations found in 44 CFR 350, 351 and 352. 44 CFR 350 codifies 16 planning standards that form the basis for radiological emergency response planning for licensee, State, tribal and local governments impacted by the emergency planning zones established for each nuclear power plant site in the United States. 44 CFR 350 sets forth the mechanisms for the formal review and approval of State, Tribal and local government radiological emergency response plans and procedures by DHS/FEMA. One of the REP program cornerstones established by these regulations is the biennial exercise of offsite response capabilities. During these exercises State, Tribal and local governments demonstrate their abilities to implement their plans and procedures to protect the health and safety of the public in the event of a radiological emergency at the nuclear plant.

The results of this exercise together with review of the radiological emergency response plans and procedures and verification of the periodic requirements set forth in NUREG-0654/FEMA-REP-1 through the Annual Letter of Certification and staff assistance visits enables FEMA to provide a statement with the transmission of this final After Action Report to the NRC that State, Tribal and local plans and preparedness are; (1) adequate to protect the health and safety of the public living in the vicinity of the nuclear power facility by providing reasonable assurance that appropriate protective measures can be taken offsite in the event of a radiological emergency, and (2) capable of being implemented.

The Florida Division of Emergency Management (FLDEM) participated in this exercise as a State Management Team (SMT) simulation cell providing the equivalent response and coordination expected during an actual event. FLDEM previously demonstrated all required criteria during the St. Lucie Nuclear Power Plant exercise conducted on February 24, 2010, and has been actively involved with the Deepwater Horizon oil spill response since the end of April 2010; continually demonstrating all aspects of capabilities and criteria required for managing a CBRN accidental release.

Formal submission of the Radiological Emergency Response Plan (RERP) for CRNPP to FEMA by the State of Florida occurred on August 26, 1983. Formal approval of the State of Florida's RERP was granted on February 14, 1984, under 44 CFR 350.

A REP exercise was evaluated on October 6, 2010, and included evaluations of the following out of sequence (OOS) activities held on October 4 and 5, 2010, consisting of the following:

- Citrus County: Protective actions for schools on October 4, 2010.
- Levy County: Protective actions for schools; emergency worker and vehicle decontamination on October 5, 2010

## 2.2 FEMA Exercise Objectives and Capabilities

Capabilities-based planning allows for exercise planning teams to develop exercise objectives and observe exercise outcomes through a framework of specific action items that were derived from the Target Capabilities List (TCL). The capabilities listed below form the foundation for the organization of all FEMA Region IV REP Program objectives and observations in this exercise.

- **Emergency Operations Center (EOC) Management:** Is the capability to provide multi-agency coordination (MAC) for incident management by activating and operating an EOC for a pre-planned or no-notice event. EOC management includes EOC activation, notification, staffing, and deactivation; management, direction, control, and coordination of response and recovery activities; coordination of efforts among neighboring governments at each level and among local, regional, State, and Federal EOCs; coordination of public information and warning; and maintenance of the information and communication necessary for coordinating response and recovery activities.
- **Emergency Public Information and Warning:** Is the capability that includes public information, alert/warning and notification. It involves developing, coordinating, and disseminating information to the public, coordinating officials, and incident management and responders across all jurisdictions and disciplines effectively under all hazard conditions.
- **Citizen Evacuation and Shelter in Place:** Is the capability to prepare for, ensure communication of, and immediately execute the safe and effective sheltering-in-place of an at-risk population (and companion animals), and/or the organized and managed evacuation of the at-risk population (and companion animals) to areas of safe refuge in response to a potentially or actually dangerous environment. In addition, this capability involves the safe reentry of the population where feasible.
- **Emergency Public Safety and Security Response:** Is the capability to reduce the impact and consequences of an incident or major event by securing the affected area, including crime/incident scene preservation issues as appropriate, safely diverting the public from hazards, providing security support to other response operations and properties, and sustaining operations from response through recovery. Public Safety and Security Response requires coordination among officials from law enforcement (LE), fire, and emergency medical services (EMS).
- **Hazardous Materials Response and Decontamination:** Is the capability to assess and manage the consequences of a hazardous materials release, either accidental or as part of a terrorist attack. It includes testing and identifying all likely hazardous substances onsite; ensuring that responders have protective clothing and equipment; conducting rescue operations to remove affected victims from the hazardous environment; conducting geographical survey searches of

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suspected sources or contamination spreads and establishing isolation perimeters; mitigating the effects of hazardous materials, decontaminating on-site victims, responders, and equipment; coordinating off-site decontamination with relevant agencies, and notifying environmental, health, and law enforcement agencies having jurisdiction for the incident to begin implementation of their standard evidence collection and investigation procedures.

Additionally, each capability is linked to several corresponding activities and tasks to provide additional detail. Based upon the identified exercise objectives, the following capabilities and associated activities are:

- **Objective 1:** Demonstrate the ability to provide EOC management including direction and control through the Counties and State EOC Multi-agency Coordination Center System (MACCS).
  - **Capability: EOC Management** - Activate EOC/MACC/IOF; Direct EOC/MACC/IOF Tactical Operations; and Provide EOC/MACC/IOF Connectivity
- **Objective 2:** Demonstrate the ability to provide protective action decision-making for State and County emergency workers and public through exercise play and discussions of plans and procedures.
  - **Capability: EOC Management** - Gather and Provide Information; Identify and Address Issues; and Support and Coordinate Response
  - **Capability: Emergency Public Information and Warning** - Manage Emergency Public Information and Warnings; Activate Emergency Public Information, Alert/Warning, and Notification Plans and Issue Emergency Warnings
- **Objective 3:** Demonstrate the ability to physically implement protective actions for State and Counties' emergency workers and public through exercise demonstration.
  - **Capability: EOC Management** - Direct EOC Tactical Operations; Gather and Provide Information; and Identify and Address Issues
  - **Capability: Emergency Public Safety and Security Response** - Activate Public Safety and Security Response; Control Traffic, Crowd, and Scene; and Command and Control Public Safety and Security Response Operations
  - **Capability: Citizen Evacuation and Shelter-in-Place** - Direct Evacuation and/or In-Place Protection Operations; Activate Evacuation and/or In-Place Protection; Implement Evacuation Orders for General Population; Collect and Evacuate Population Requiring Assistance
  - **Capability: Hazardous Materials Response and Decontamination** – Direct Hazardous Material Response and Decontamination Tactical

Operations; Activate Hazardous Material Response and Decontamination; Assess Hazard and Evaluate Risk; and Conduct Decontamination and Clean-up /Recovery Operations

- **Objective 4:** Demonstrate the ability to activate the Prompt Alert and Notification System utilizing the PNS/EAS System through exercise play.
  - **Capability: Emergency Public Information and Warning -** Manage Emergency Public Information and Warnings; Activate Emergency Public Information, Alert/Warning, and Notification Plans; and Issue Public Information, Alerts/Warnings, and Notifications.
- **Objective 5:** Demonstrate the effectiveness of plans, policies and procedures in the Joint Information Center (JIC) for joint (public and private sectors) emergency information communications.
  - **Capability: Emergency Public Information and Warning -** Establish Emergency News Center; Conduct Emergency News Center Operations; Issue Public Information, Alerts/Warnings, and Notifications; Conduct Media Relations; and Provide Public Rumor Control.

## 2.3 Scenario Summary

The exercise began with the Crystal River Nuclear Power Plant Simulator in the interactive mode.

At 0730 initial conditions and ground rules are presented to the operating crew in the Simulator Control Room and participants in the shops. Plant is operating at 75% power. Power had been at approximately 45% for 24 hours to repair “A” MFWP governor. After the governor was repaired power was stabilized at 75% for post maintenance testing of the “A” MFWP governor. The testing is complete and engineering is analyzing the data. SP-312A NI calibration check was performed; (check SAT). Both MFW loops and the “A” MFWP have not been returned to automatic following post maintenance testing of “A” MFWP governor. During the power ascent seal injection flow became erratic. Manual seal injection flow control has been established using MUV-16 flow controller (MU-15-FIC) in “hand” operation. I&C is investigating the flow control problem. The cause of the erratic operation has not been identified. The crew is instructed to restore ICS to automatic and maintain current power.

At 0800 there is a turbine failure. When ICS is returned to automatic, a blade tip on the low-pressure turbine breaks off, penetrating the turbine casing. A large steam leak is created, vacuum is lowering rapidly and the turbine is out-of balance causing severe vibrations. The crew trips the turbine and RPS trips the reactor. At 0802 the SPO reports a hole in the low-pressure turbine on the south side. Steam was blowing out, but now it appears to be drawing air in. An Unusual Event is declared at 0825 based on turbine failure penetrating the casing (EAL 3.10). The EC may perform a discretionary staffing



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of the TSC. A 350gpm RCS leak begins at 0825. Containment radiation monitors and the sump begin slowly rising. The crew enters AP-520 and after several minutes opens injection valve MUV-24 to maintain pressurizer level.

An Alert is declared at 0840 based on a potential loss of RCS. TSC and OSC staffing is initiated and (simulated) in-shop accountability begins. Discretionary EOF staffing is also initiated per EM-400 guidance. The TSC is operational at 0915 (required 60 minutes from the Alert declaration). The RCS leak degrades to a large-break LOCA of 1000gpm at 0935. Pressure in the reactor building increases rapidly. Containment radiation monitors also increase. DCP-1A fails to auto start and must be started manually. DHP-1B shaft seizes and the motor overload fails. The “A” LPI injection valve DHV-5 fails closed. Attempts to manually control it are not successful.

RB pressure causes the purge exhaust valves to unseat and alarms are received on RM-A8 and RM-A2 low-range gas channel indicating a release to the auxiliary building and the environment.

A Site Area Emergency is declared at 0950 based on loss of sub-cooling margin or an RCS leak requiring one or more injection valves and loss of containment. Required EOF staffing is initiated. The site evacuation alarm is sounded (simulated) initiating protected area evacuation and accountability (simulated). Protected area accountability is complete (simulated) at 1020. The RCS hotleg piping fails completely at 1015. Pressure rises sharply, quickly exceeding the 100R/hr clad loss trigger point. Rm-A2 low-range scale is exceeded. The core is not adequately cooled and superheat develops. PAR was as follows:

Evacuate: Zone 1

Shelter: Zones 2 and 3

Entry into EOP-07 (inadequate core cooling), meets the General Emergency criteria based on the potential loss of the fuel clad fission product barrier and the earlier losses of the RCS and containment barriers. A protective action recommendation would be made to evacuate zone 1 and shelter zones 2 and 3. The EOF is required to be operational by this time 1050 (or 60 minutes from the Site Area Emergency). There is a concern regarding core cooling at 1130. If building spray is running, the BWST may be approaching levels threatening continued HPI. Without LPI, HPI cannot pump water from the RB sump. As a contingency, DHV-5 may need to be returned to the “A” decay heat train. A power glitch causes the TSC AHFs-60 and 61 to trip at 1220. Temperature in the TSC begins to rise. The breakers can be reset.

The exercise is terminated at approximately 1330 depending on demonstration of exercise objectives.



## 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 October 6, 2010 plume exercise and OOS interviews and demonstrations on October 4 and 5, 2010.

### 3.2 Evaluation Summaries

#### 3.2.1 State Of Florida

##### 3.2.1.1 State Management Team

##### **Emergency Operations Center Management Capability Summary:**

The State Management Team (SMT) leader arrived on site and organized the SMT deployed team, established communications with the State Emergency Operations Center and the Risk counties of Citrus and Levy. The SMT leader and the County Emergency Management (EM) Directors coordinated activities, protective action decisions (PAD) and information to insure the safety and health of the public.

State Management Team (SMT) simulation cell provided the equivalent response and coordination that would be expected during an actual event. FLDEM previously demonstrated all required criteria during the St. Lucie Nuclear Power Plant exercise conducted on February 24, 2010, and has been actively involved with the Deepwater Horizon oil spill response since the end of April 2010; continually demonstrating all aspects of capabilities and criteria required for managing a CBRN accidental release.

##### **Emergency Public Information and Warning Capability Summary:**

The SMT effectively coordinated with Citrus and Levy County EM times for siren soundings and appropriate Emergency Alert System (EAS) messages from their Radiological Emergency Response Plans (RERP) to provide accurate and timely emergency notifications to the public without undue delay.

For this capability the following criteria were met: 5.b.1.

### 3.2.1.2 Emergency News Center

This assessment addresses the interface and interaction among Citrus and Levy Counties, Progress Energy and the public in the Emergency News Center (ENC). The ENC has dedicated space and equipment located in the Progress Energy facility in Crystal River, Florida.

State, local and utility plans call for the activation of the CRNPP ENC following the declaration of SAE. The utility and risk county personnel arrived in accordance with procedures following SAE at 0945 and the utility's ENC Director declared the ENC operational at 1043. County personnel conducted communications checks with their respective emergency operations centers (EOC) and direct contact with the Emergency Management Directors (EMD).

The close proximity of the EMD facilitated the formal message approval process. The ability to provide timely emergency information and instructions for the public and the media was successfully demonstrated at the ENC. Although the message preparation and coordination was exemplary, it was felt that there was a lack of news releases related to precautionary measures being taken in the counties.

Information was routinely gathered from the EOCs to assist in providing detailed information to be shared with the public through media outlets. Charts posted in the ENC and used by the ENC Director in pre-media briefing coordination focused on utility, State and risk county responsibilities and area of concentration. During the two media briefings, the PIOs were well versed in their local response and were able to fully discuss what actions had been taken by their organizations. The county personnel were exceptionally well prepared and the level of detail provided on actions being taken in the counties to safeguard their citizens was complete and left little room for follow-up queries.

One of the roles of the ENC is to assist in quelling rumors and dispelling inaccurate information. To accomplish this requires ENC representatives being provided input from citizen information lines located in the counties, at the SEOC and the utility corporate headquarters on rumors and trends. The latter was demonstrated by the utility. The negotiated extent of play agreement precluded evaluation of this aspect of ENC operations.

Of note was the performance of the five public information personnel from the risk counties. These personnel were solely and collectively well prepared to execute their responsibilities. They fully understood their county's emergency response plans and were well versed in the flow of response operations and had readily available detailed demographic data to respond to queries. From a utility/risk county perspective this capability was fully met.

For this capability the following criteria were met: 1.a.1, 1.d.1, 1.e.1, and 5.b.1.

### 3.2.1.3 Dose Assessment

#### **Hazardous Materials Response and Decontamination Capability Summary:**

The Progress Energy Emergency Operations facility (EOF) served as the interface between the utility operator and the responding State and local government organizations. Consistent with Florida's Concept of Operations, as specified in the RERP, the Governor's Authorized Representative, i.e., the SMT was deployed directly to the utility EOF and was authorized to make administrative and technical decisions on behalf of the Governor. Similarly, senior Bureau of Radiation Control (BRC) staff members were also deployed to the EOF and were responsible for conducting independent accident analyses, to include radiological dose assessment, the development of protective actions to protect public health and safety, providing direction and control for the State radiological field monitoring teams (FMT) and overall, served as the technical advisor to the SMT.

The BRC, in the conduct of performing the independent accident analyses, utilized all the available information and resources to factor into the development of protective actions, to include FMT data, the RASCAL computer model, plant status and associated technical information and recommendations developed and provided by the utility operator.

The utility operator also performed dose modeling utilizing the RASCAL computer model. While there were some variations in the initial plant condition assumption that were input into the dose models by each of the two participating response organizations, these variations in results initially could not be supported by FMT measurements. Consequently, BRC and the utility operator engaged in a peer review of each other's analyses to better understand these differences, which were subsequently reconciled and appropriate PADs were developed and implemented.

The BRC successfully demonstrated its capability to effectively conduct independent accident analyses in a manner consistent with the preservation of public health and safety.

For this capability the following criteria were met: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2, and 4.a.2.

### 3.2.1.4 Field Monitoring Teams

Three Field Monitoring teams (FMTs) were pre-positioned at the EOF. The FMT equipment, supplies and vehicles were adequate to support radiological monitoring and emergency worker functions. Three communications systems were available, tested and verified operational before deployment. The FMTs were provided an operational and safety briefing by the Mobile Emergency Response Laboratory (MERL) and field team supervisors. The FMTs performed hazard assessment by traversing downwind locations in a strategic manner as directed by the field team director (FTD), to identify and quantify the magnitude of the simulated release. Radiological monitoring equipment was operationally tested prior to use, and used correctly in the field to determine ambient

radiological conditions. Ambient readings and personnel exposures were routinely communicated to the FTD. Airborne radioactivity was assessed using an air sampler fitted with a particulate filter and sample cartridge.

The repeat-back process for radio communications was not used throughout the exercise and a recommendation was made to consistently use repeat-back in all radio communications, and to codify the content to enable efficient and secure transmissions. Additionally, a recommendation was made to include a waypoint to the CRNPP on the GPS units to provide site orientation for the FMTs in the field.

For this capability the following criteria were met: 1.a.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2, 3.a.1, 3.b.2, 4.a.1, 4.a.2, and 4.a.3

### **3.2.1.5 Emergency Alert Station**

#### **Emergency Public Safety and Security Response Capability Summary:**

The SMT, Citrus and Levy Counties coordinated EAS activation during PAR discussions and made timely decisions for siren sounding and EAS activations. Once discussions were complete and all parties were in concurrence with the implementation time and EAS message content decisions, each county manager contacted their deputy EOC manager and provided exact EAS activation times and message numbers.

All decision makers were very familiar with the EAS process and messages. They selected messages appropriate for the situation and achieved group consensus. No delays or issues in the EAS decision making process were observed. The State public information officer did not participate per the extent of play agreement.

For this capability the following criteria were met: 5.b.1

## **3.2.2 Risk Jurisdictions**

### **3.2.2.1 Citrus County**

#### **3.2.2.1.1 Emergency Operations Center**

#### **Emergency Operations Center Management Capability Summary:**

A well thought out process for mobilizing the EOC and other county response agencies exists in Citrus County, anchored firmly on the capabilities and use of “Code Red” automatic dialing and communications system. Once response agencies are in place at the EOC, an initial briefing is conducted providing information on the current and projected status of the public hazard. The EMA Director and his designated EOC Operations Chief demonstrated effective and proactive direction and control of the county response effort, both at the EOC and at the EOF. They both conducted concise,

aggressive proactive briefings of EOC staff while constantly encouraging them to think of future needs and problems. When deployed to the EOF the EMD ensured consistent communications with the EOC Operations Chief sharing decision information. The County EOC staff demonstrated a high degree of competence and the ability to protect the health and safety of the public and emergency workers in the event of an incident at CRNPP is not in question.

The EOC is a new facility and is well equipped to support and sustain operations. There was more than adequate space for all response organizations to assemble and conduct operations. Even when fully staffed and with operations ongoing, there was minimum noise which maintained a pleasant temperature. Information technology infrastructure is robust and designed to be accessible by all. The use of WebEOC software enhanced the response effort.

For this capability the following criteria were met: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2, 5.a.1, 5.a.3, 5.b.1

### **Emergency Public Information and Warning Capability Summary:**

The County 911 operations center has the primary responsibility for siren activation for both Citrus and Levy Counties. Upon receiving the information from the EOF for the time of siren activation the sirens are activated. A computer screen displays the status of all sirens for operational status, during the course of the exercise, no siren failures were noted.

For this capability the following criteria were met: 5.a.1

#### **3.2.2.1.2 Protective Actions for Schools**

### **Citizen Evacuation and Shelter in Place Capability Summary:**

All decisions for protective actions would be directed by the office of the school district superintendent. That decision would come from the district representatives at the EOC and would be based on recommendations on decisions made by emergency management at SAE.

The principal, assistant principal and school resource officer from Crystal River High School were interviewed. All were well versed in directing the students and staff and coordinating actions during emergency situations. The staff takes part in monthly training sessions throughout the year and at least two sessions involve radiological situations at CRNPP. The school has several copies of the emergency preparedness plans available with direction and control for school response capable of being carried out by several members of the school administration. Students and families are provided with the school response procedures at the beginning of the school year and if necessary are updated and disseminated if changes are made. In the event of emergency notification a

call system is available to student's homes to notify families of school actions.

The time of the school day would be taken into consideration for evacuation or early dismissal. In the event of evacuation, two classes at a time would be loaded on a bus and then transported to the fairground facility near Inverness. Local law enforcement would provide escort for the buses and communications could be maintained on several frequencies. The dose exposure would be obtained from the law enforcement officer's dosimetry readings. Once at the fairgrounds, the students would be supervised by teachers and staff until picked up by a responsible adult.

For this capability the following criteria was met: 3.c.2.

### **3.2.3.1 Levy County**

#### **3.2.3.2.1 Emergency Operations Center**

##### **Emergency Operations Center Management Capability Summary:**

The County EOC manager and his staff demonstrated the capability to provide multi-agency coordination for incident management by activating and operating the EOC for this exercise. The EOC Manager demonstrated exemplary direction and control in the response to an event at CRNPP.

The EOC was set up by Emergency Support Function (ESF) groupings and all ESFs were present. The ESF representatives and other staff operating in the EOC demonstrated a clear knowledge and understanding of their agency's roles in decision making and collaboration with other ESFs and off site response organizations. All ESFs were provided with multiple methods for communicating with other agencies, including computers at each desk with electronic mail access, multiple telephones and radios. A RACES operator was available on site if needed. The county warning point was the County 911 Center operated by the Sheriff's Office, which had multiple communication systems and was properly staffed.

For this capability the following criteria were met: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2, 5.a.3, and 5.b.1

##### **Emergency Public Information and Warning Capability Summary:**

All public information is released through the ENC. The rumor control function was adequately staffed and relevant information was received and evaluated to track trends or referred for action. All siren activation procedures are performed by Citrus County.

For this capability the following criteria were met: 5.b.1

#### **3.2.3.2.2 Protective Actions for Schools**

**Citizen Evacuation and Shelter in Place Capability Summary:**

The principal at Yankeetown Elementary School was interviewed on October 5, 2010 and was well versed in directing the students and staff and coordinating actions during emergency situations. The school has several copies of the emergency preparedness plans available. Direction and control for school response is capable of being carried out by several members of the school administration. Students and families are provided with the school response procedures at the beginning of the school year and if necessary are updated and disseminated if changes are made. Emergency notification concerning school evacuation would be in conjunction with the County “Code Red” system to notify the families. All PADs would be directed by the office of the school board. Decisions would come from the district representatives at the EOC and would be based on recommendations made by emergency management personnel at SAE.

The school utilizes a standard evacuation policy with no early dismissal. In the event of evacuation, all 197 enrolled students would be loaded on four busses and transported to the reception center at Bronson High School. The necessary busses are on site at the school and if no drivers were readily available, staff members are licensed to drive them. Law enforcement would provide escort and communications for the busses. Communications could be maintained on several frequencies. The dose exposure would be obtained from the law enforcement officer’s dosimetry reading. Once at the reception center, the students would be supervised until picked up by a responsible adult.

For this capability the following criterion were met: 3.c.2.

**3.2.3.2.3 Backup Route Alerting****Emergency Public Safety and Security Response Capability Summary:**

Levy County has no responsibility for primary alerting and notification of the public residing in the 10-mile EPZ per the county plan. By mutual agreement and coordination the twelve sirens located in Levy County will be activated from the Citrus County EOC. The Assistant EOC Director and County Fire Coordinator (FC) stated that when the decision to evacuate the public is made, the sirens, EAS messages and “Code Red” (activated locally) would be used to notify the public. During the exercise there was no siren failure, however the FC stated that if there had been a failure, Citrus County EOC Director would notify the Levy County EOC Director of the affected coverage area and back up route alerting would be conducted to notify those residents of what protective actions to take. Notification would have been accomplished utilizing police and fire vehicles, including aircraft equipped with public address systems.

For this capability the following criteria were met: 5.a.3

**3.2.3.2.4 Emergency Worker and Vehicle Decontamination**



**Hazardous Materials Response and Decontamination Capability Summary:**

The County demonstrated emergency worker decontamination (EWD) procedures at Lebanon Station located at the intersection of US Highway 19 and State Road 121 on October 5, 2010. The demonstration showed effective cooperation between more than 20 County Fire and Public Safety agencies, both paid and volunteer. The vehicle and EWD station was constructed along the county's major evacuation route and configured to take full advantage of available space and terrain features. The Incident Commander professionally and proactively managed personnel and the mission simultaneously. Vehicle and personnel monitoring was thorough and effective. When exercise and real-world challenges were encountered, they were effectively overcome by solid management, teamwork, continuous communication and training.

For this capability the following criteria were met: 1.e.1, 3.a.1, 6.a.1 and 6.b.1.

**3.2.3.2.5 Traffic and Access Control**

**Emergency Public Safety and Security Response Capability Summary:**

The County demonstrated this capability out of sequence on October 5, 2010. Personnel from the County Sheriff's Office, Marion County Sheriff's Office and Levy County Road Department established three traffic control points (TCP) at the junctions of US Highway 19, State Road 121 and County Road 336. Sufficient signs, barricades and vehicles were used to aid in controlling traffic flow. All personnel were knowledgeable of evacuation routes and reception center locations and described procedures for handling impediments to traffic flow. Each worker wore the appropriate dosimetry and was aware of exposure limits and reporting requirements.

For this capability the following criteria were met: 3.d.1, and 3.d.2.



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## SECTION 4: CONCLUSION

Officials and representatives from the State of Florida, the risk counties of Citrus and Levy, Progress Energy, as well as numerous volunteers participated in the exercise. The cooperation and teamwork of the participants was evident throughout all phases of the exercise. FEMA wishes to acknowledge the efforts of the many individuals who participated and made the exercise a success. 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.

State and local emergency response organizations demonstrated knowledge of their emergency response plans and procedures and successfully implemented them.

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## APPENDIX A: EXERCISE TIMELINE

| Emergency Classification Level or Event  | Time Utility Declared | Time That Notification Was Received Or Action Was Taken |      |           |         |
|--|-----------------------|---|------|-----------|---------|
|  |                       | SMT   | ENC  | CITRUS CO | LEVY CO |
| Unusual Event  | 0810                  | 0821  | N/A  | 0821      | 0825    |
| Alert  | 0835                  | 0838  | N/A  | 0843      | 0847    |
| Site Area Emergency  | 0945                  | 0959  | N/A  | 1000      | 1007    |
| General Emergency  | 1018                  | 1031  | 1027 | 1033      | 1039    |
| Simulated Rad. Release Started   | 0945                  | 0959  | 1118 | 1000      | 1007    |
| Simulated Rad. Release Terminated  | N/A                   | N/A   | N/A  | N/A       | N/A     |
| Facility Declared Operational  | 1028                  | 1029  | 1043 | N/A       | 0918    |
| Declaration of State of Emergency  | Local N/A             | N/A   | 1046 | N/A       | N/A     |
|  | State N/A             | N/A   | 1118 | 1011      | 0930    |
| Exercise Terminated  | 1308                  | N/A   | 1307 | 1307      | 1305    |
| Early Precautionary Actions: Notification of Special Needs Population                            |                       | N/A   | N/A  | 1008      | 1008    |
| 1 <sup>st</sup> Protective Action Decision: Notify the public<br>Precautionary: Relocate Schools |                       | N/A   | 1023 | 1008      | 1009    |
| Siren Activation   |                       | N/A   | N/A  | 1015      | 1015    |
| 1 <sup>st</sup> EAS Message  |                       | N/A   | N/A  | 1018      | 1018    |

| Emergency Classification Level or Event  | Time Utility Declared | Time That Notification Was Received Or Action Was Taken |      |           |         |
|--|-----------------------|---|------|-----------|---------|
|  |                       | SMT   | ENC  | CITRUS CO | LEVY CO |
| 2 <sup>nd</sup> Protective Action Decision: Evacuate: Zone 1<br>Shelter: Zone 2 & 3<br>Ingestion of KI for emergency workers |                       | 1046  | N/A  | 1048      | 1048    |
| Siren Activation:  |                       | 1050  | N/A  | 1050      | 1050    |
| 2 <sup>nd</sup> EAS Message  |                       | 1055  | N/A  | 1055      | 1055    |
| 3 <sup>rd</sup> Protective Action Decision: Evacuate Zones 1, 2 & 3<br>Ingestion of KI for Public                            |                       | 1205  | 1205 | 1205      | 1205    |
| Siren Activation   |                       | 1210  | 1210 | 1210      | 1210    |
| 3 <sup>rd</sup> EAS Message  |                       | 1213  | 1213 | 1213      | 1213    |
| KI for Emergency Workers   |                       | 1046  | 1046 | 1046      | 1046    |
| KI for General Public  |                       | 1205  | 1205 | 1205      | 1205    |

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## APPENDIX B: EXERCISE EVALUATOR AND ASSIGNMENTS

| Crystal River Nuclear Power Plant    |  | 2010 REP Exercise  |   |
|--------------------------------------|--|--|---|
| Location                             | Evaluator  | Criterion  | Capability                                |
| <b>State of Florida</b>              |  |  |   |
| State Management Team (SMT)          | Lisa Rink  | 1.c.1, 2.a.1, 2.b.2, 5.a.1,  | EOC Management,                           |
|                                      | Lorenzo Lewis  | 1.a.1, 1.d.1, 1.e.1, 5.b.1   | Emergency Public Information and Warning  |
|                                      | Gerald McLemore                                      |  |   |
| Emergency News Center                | Robert Spence<br>Willis Larrabee (EOF/ENC interface) | 1.a.1, 1.d.1, 1.e.1, 5.b.1 (Media Briefings)<br>5.b.1 (Public Inquiry) | Emergency Public Information and Warning  |
| DHEC Dose Assessment                 | Robert Trojanowski                                   | 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2, 4.a.2                 | HAZMAT Decontamination & Response         |
| Emergency Operations Facility        | Robert Trojanowski (NRC)                             | 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.b.1                                      | EOC Management                            |
| Field Monitoring Teams (three teams) | Alan Bevan<br>Dave Stuenkle<br>Brad McRee            | 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 4.a.1, 4.a.3                        | HAZMAT Decontamination & Response         |
| <b>Risk Jurisdictions</b>            |  |  |   |
| <b>Citrus County, Florida</b>        |  |  |   |
| Emergency Operations Center          | Obhie Robinson                                       | 1.c.1, 2.b.2, 2.c.1, 3.c.1, 5.a.1, 5.b.1                               | EOC Management,                           |
|                                      | John Ackermann<br>John Fill                          | 1.a.1, 1.d.1, 1.e.1, 2.a.1, 2.c.1, 5.a.3                               | Emergency Public Information and Warning, |
|                                      |  |  |   |
| Protective Actions for Schools       | Jon Sandberg   | 3.c.2  | Citizen Evacuation & Shelter in Place     |

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| <b>Levy County, Florida</b>                |  |   |   |
|--|--|---|---|
| Emergency Operations Center                | Jon Sandberg                                 | 1.c.1, 2.b.2, 3.c.1, 3.d.1, 3.d.2, 5.a.1, 5.b.1 | EOC Management,                               |
|  | Mike Dolder<br>Ron Shaw                      | 1.a.1, 1.d.1, 1.e.1, 2.a.1, 2.c.1, 5.a.3        | Emergency Public Information and Warning,     |
| Protective Actions for Schools             | Jon Sandberg                                 | 3.c.2   | Citizen Evacuation & Shelter in Place         |
| Emergency Worker & Vehicle Decontamination | Obhie Robinson<br>John Fill<br>Lorenzo Lewis | 1.e.1, 3.a.1, 6.a.1, 6.b.1                      | HAZMAT Decontamination & Response             |
| Backup Route Alerting                      | Ron Shaw                                     | 5.a.3   | Emergency Public Safety and Security Response |
| Traffic Control Points                     | John Fill                                    | 3.d.1, 3.d.2                                    | Emergency Public Safety and Security Response |

## APPENDIX C: ACRONYMS

| Acronym | Meaning  |
|---------|--|
| AAC     | After Action Conference                          |
| AAR     | After Action Report                              |
| ARC     | American Red Cross                               |
| ARCA    | Area Requiring Corrective Action                 |
| ARES    | Amateur Radio for Emergency Services             |
| CCSO    | Citrus County Sheriff's Office                   |
| CFR     | Code of Federal Regulations                      |
| CRNPP   | Crystal River Nuclear Power Plant                |
| DEMD    | Deputy Emergency Management Director             |
| DHS     | Department of Homeland Security                  |
| DNR     | Department of Natural Resources                  |
| DOC     | Department of Commerce                           |
| DOE     | Department of Energy                             |
| DOI     | Department of the Interior                       |
| DOT     | Department of Transportation                     |
| DPH     | Department of Public Health                      |
| DRD     | Direct-Reading Dosimeter                         |
| DSS     | Department of Social Services                    |
| EAL     | Emergency Action Level                           |
| EAS     | Emergency Alert System                           |
| ECL     | Emergency Classification Level                   |
| EEG     | Exercise Evaluation Guide                        |
| EMA     | Emergency Management Agency                      |
| EMS     | Emergency Medical Services                       |
| ENC     | Emergency News Center                            |
| EOC     | Emergency Operations Center                      |
| EOF     | Emergency Operations Facility                    |
| EOPA    | Extent of Play Agreement                         |
| EMD     | Emergency Management Director                    |
| EMITS   | Emergency Management Information Tracking System |
| EPA     | Environmental Protection Agency                  |
| EPIP    | Emergency Plan Implementing Procedure            |



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| Acronym | Meaning   |
|---------|---|
| EPZ     | Emergency Planning Zone                               |
| ER      | Emergency Room  |
| ERC     | Emergency Response Coordinator                        |
| ERDS    | Emergency Response Data System                        |
| ERP     | Emergency Response Plan                               |
| ESF     | Emergency Support Function                            |
| EW      | Emergency Worker                                      |
| EWD     | Emergency Worker Decontamination                      |
| EXPLAN  | Exercise Plan   |
| FEMA    | Federal Emergency Management Agency                   |
| FEOC    | Forward Emergency Operations Center                   |
| FMT     | Field Monitoring Team                                 |
| FOUO    | For Official Use Only                                 |
| FRMAC   | Federal Radiological Monitoring and Assessment Center |
| GE      | General Emergency                                     |
| GIS     | Geographic Information System                         |
| GM      | Geiger-Muller (detector)                              |
| GPS     | Geographic Positioning System                         |
| HAZMAT  | Hazardous Materials                                   |
| HO      | Health Order  |
| HSEEP   | Homeland Security Exercise and Evaluation Program     |
| HQ      | Headquarters  |
| IC      | Incident Commander                                    |
| ICS     | Incident Command System                               |
| IP      | Improvement Plan                                      |
| IRIS    | Internet Routed Information System                    |
| IPZ     | Ingestion Pathway Zone                                |
| JIC     | Joint Information Center                              |
| KI      | Potassium Iodide                                      |
| LP-1    | Local Primary -1                                      |
| MOC     | Mobile Operations Center                              |
| MOU     | Memorandum of Understanding                           |
| mR      | Milliroentgen   |

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| Acronym    | Meaning   |
|------------|---|
| mR/h       | milliroentgen per hour  |
| NAWAS      | National Warning System   |
| NGO        | Non-Governmental Organization   |
| NIMS       | National Incident Management System   |
| NOUE       | Notification of Unusual Event   |
| NPP        | Nuclear Power Plant   |
| NRC        | Nuclear Regulatory Commission   |
| NUREG-0654 | NUREG-0654/FEMA-REP-1, Rev. 1, <i>"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980</i> |
| OOS        | Out-of-Sequence   |
| ORO        | Offsite Response Organization   |
| PA         | Public Announcement   |
| PAD        | Protective Action Decision  |
| PAG        | Protective Action Guide   |
| PAR        | Protective Action Recommendation  |
| PIO        | Public Information Officer  |
| PPE        | Personal Protective Equipment   |
| PRD        | Permanent Record Dosimetry  |
| R          | Roentgen  |
| RAC        | Regional Assistance Committee   |
| RACES      | Radio Amateur Civil Emergency Service   |
| REA        | Radioactive Emergency Area  |
| REM        | Roentgen Equivalent Man   |
| REP        | Radiological Emergency Preparedness   |
| REPP       | Radiological Emergency Preparedness Program   |
| RERP       | Radiological Emergency Response Plan  |
| R/h        | Roentgen(s) per hour  |
| RO         | Radiological Officer  |
| SAE        | Site Area Emergency   |
| SEOC       | State Emergency Operations Center   |
| SIMCELL    | Simulation Cell   |
| SIP        | Shelter-in-Place  |

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| Acronym | Meaning                                      |
|---------|--|
| SLED    | State Law Enforcement Division               |
| SMRAP   | Southern Mutual Radiological Assistance Plan |
| SMT     | State Management Team                        |
| SOG     | Standard Operating Guide                     |
| SOP     | Standard Operating Procedure                 |
| SSS     | Selective Signaling System                   |
| TCL     | Target Capabilities List                     |
| TCP     | Traffic Control Point                        |
| THD     | Technological Hazard Division                |
| TLD     | Thermoluminescent dosimeter                  |
| USDA    | U.S. Department of Agriculture               |
| UTL     | Universal Task List                          |
| VFD     | Volunteer Fire Department                    |

## APPENDIX D: EXERCISE LOCATIONS

| Exercise Locations   | Out of Sequence Locations   |
|--|---|
| <b>Progress Energy Emergency Operations Facility (EOF)/ENC/SMT</b><br>8200 W, Venable Street<br>Crystal River, Florida 34428 | <b>Citrus County School</b><br><b>Crystal River High School</b><br>1205 NE 8 <sup>th</sup> Avenue<br>Crystal River, Florida 34428 |
| <b>Citrus County Emergency Operations Center (EOC)</b><br>3549 Saunders Way<br>Lecanto, Florida 34461                        | <b>Levy County Schools</b><br><b>Yankeetown Elementary School</b><br>113 N. Schoolcraft Drive<br>Inglis, Florida 34449            |
| <b>Levy County Emergency Operations Center (EOC)</b><br>9010 NE 79 <sup>th</sup> Avenue<br>Bronson, Florida 32621            | <b>Levy County EWD</b><br><b>Lebanon Station</b><br>Intersection of US Highway 19 and CR 336<br>Tidewater, Florida                |

## Homeland Security Exercise and Evaluation Program (HSEEP)

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2010 Crystal River Nuclear power Plant REP Exercise

### APPENDIX E: EXERCISE PLANNING TEAM LEADERSHIP

| Agency  | Name            | Email                          | Phone        |
|---|-----------------|--------------------------------|--------------|
| Crystal River Nuclear Power Plant (CRNPP)                         | Charles Polisen | charles.polisen@gmail.com      | 352-563-4522 |
| FEMA Region IV  | Randall Hecht   | randall.hecht@dhs.gov          | 770-220-3147 |
| FEMA Region IV  | Jon Sandberg    | jon.sandberg@dhs.gov           | 770-220-3149 |
| Florida Division of Emergency Management                          | W. Tracy Poole  | william.poole@em.myflorida.com | 229-413-2398 |
| Florida Department of Public Health – Bureau of Radiation Control | Charles Adams   | charles_adams@doh.state.fl.us  | 407-297-2096 |
| Citrus County Sheriff's Office                                    | Bretlee Jordan  | bjordan@sheriffcitrus.org      | 352-249-2704 |
| Levy County Emergency Management                                  | John MacDonald  | jmacrep@bellsouth.net          | 352-486-5593 |

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