



Final Exercise Report

CRUSTAL RIVER NUCLEAR POWER PLANT

Licensee: Florida Power Corporation

Exercise Date: May 29-30, 2002

Report Date: August 1, 2002

**FEDERAL EMERGENCY MANAGEMENT AGENCY
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I. EXECUTIVE SUMMARY

On May 29-30, 2002, the Federal Emergency Management Agency (FEMA) Region IV conducted a full participation plume and ingestion exposure pathway exercise around the Crystal River Nuclear Power Plant. The purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency. This exercise was conducted to evaluate the effectiveness of State and local plans and procedures for reaching a determination of reasonable assurance for the State and County governments to protect the health and safety of the public. Contained herein is the evaluation of this biennial exercise.

The most recent exercise at this site was conducted on October 18, 2000. The qualifying emergency preparedness exercise was conducted on March 30, 1982, at the Crystal River Nuclear Power Plant.

FEMA wishes to acknowledge the efforts of the many individuals who participated in this exercise, the State of Florida, the Risk Counties of Citrus and Levy as well as the Ingestion Counties of Alachua, Dixie, Gilchrist, Hernando, Lake, Marion, Pasco and Sumter. Protecting the public health and safety is the full-time job of some of the exercise participants and an 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 were evident during this exercise. Special mention is made of the efforts of the RACES operators to assist in communication with the radiological monitoring field teams and of the volunteers who served as evacuees.

The coordination and demonstration of a significantly difficult ingestion pathway scenario was impressive. The State, Risk Counties and Ingestion Counties all worked diligently and with a great deal of concern for the safety of their respective citizens. The time, approximately a year, spent in preparation for this exercise was well spent and evident during the demonstrations.

The State and local organizations demonstrated knowledge of, and the ability to implement their emergency response plans and procedures. No Deficiencies were identified during this exercise, however, two Areas Requiring Corrective Action (ARCA) were identified as a result of the exercise. Both ARCAs identified concerned emergency worker decontamination activities that were demonstrated during the week of May 13, 2002. The correction of an ARCA for the Emergency News Center identified during the 2000 Crystal River exercise was successfully demonstrated at the February 21, 2001 Turkey Point Nuclear Power Plant exercise.

11. INTRODUCTION

On December 7, 1979, the President directed FEMA to assume the lead responsibility for all offsite nuclear planning and response. FEMA's activities are conducted pursuant to 44 Code of Federal Regulations (CFR) Parts 350, 351 and 352. These regulations are a key element in the Radiological Emergency Preparedness (REP) Program that was established following the Three Mile Island Nuclear Station accident in March 1979.

FEMA Title 44 CFR 350 establishes the policies and procedures for FEMA's initial and continued approval of State and local governments' radiological emergency planning and preparedness for commercial nuclear power plants. This approval is contingent, in part, on State and local government participation in joint exercises with licensees.

FEMA's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

- Taking the lead in offsite emergency planning and in the review and evaluation of radiological emergency response plans (RERP) and procedures developed by State and local governments;
- Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the plans and procedures conducted by State and local governments;
- Responding to requests by the NRC pursuant to the Memorandum of Understanding between the NRC and FEMA (Federal Register, Vol. 58, No. 176, September 14, 1993).
- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:
 - Department of Commerce
 - Nuclear Regulatory Commission
 - Environmental Protection Agency
 - Department of Energy
 - Department of Health and Human Services
 - Department of Transportation
 - Department of Agriculture
 - Department of the Interior, and
 - Food and Drug Administration

Representatives of these agencies serve on the FEMA Region IV Regional Assistance Committee (RAC), which is chaired by FEMA.

Formal submission of the RERPs for the Crystal River Nuclear Power Plant to FEMA Region IV by the State of Florida was made on August 26, 1983. Formal approval of these RERPs was granted on February 14, 1984.

A REP exercise was conducted on May 29-30, 2002, by FEMA Region IV to assess the capabilities of State and local emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the Crystal River Nuclear Power Plant. The purpose of this report is to present the exercise results and preliminary findings on the performance of the offsite response organizations (ORO) during a simulated radiological emergency.

The findings presented are based on the evaluations of the Federal evaluator team, with final determinations being made by the FEMA Region IV Regional Assistance Committee Chairperson, the Chief Evaluator and final approval by the Regional Director.

The criteria utilized in the FEMA evaluation process are contained in:

- NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;
- FEMA-REP-14, "Radiological Emergency Preparedness Exercise Manual," September 1991; and
- FEMA-REP "Areas Of Evaluation Methodology", December 2001.

Section III, entitled "Exercise Overview," presents basic information and data relevant to the exercise. This section contains a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional entities, which were evaluated, and a tabular presentation of the time of actual occurrence of key exercise events and activities.

Section IV, entitled "Exercise Evaluation and Results," presents **summary** information on the demonstration of applicable exercise criterion at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. This section also contains: (1) descriptions of all Deficiencies and ARCAs assessed during this exercise, recommended corrective actions, and provides space for the State and local governments' response, and (2) descriptions of ARCAs assessed during previous exercises and the status of the OROs' efforts to resolve them.

III. EXERCISE OVERVIEW

Contained in this section are data and basic information relevant to the May 29-30,2002, exercise to test the offsite emergency response capabilities in the area surrounding the Crystal River Nuclear Power Plant.

A. Plume EPZ Description

The Crystal River Nuclear Power Plant is owned and operated by Florida Power Corporation, a Progress Energy Company, headquartered in St. Petersburg, Florida. The Crystal River Nuclear Power Plant is located at the Crystal River Energy Complex, 7.5 miles northwest of the town of Crystal River, in Citrus County, Florida. The Florida Power Energy Complex contains five power plants; four coal burning and one 825 megawatt pressurized water reactor. Parts of Citrus and Levy Counties lie within the 10-mile EPZ. There are three EPZ zones with a total resident population of 15,065 persons. Land use in the EPZ is a mix of residential, business and agricultural. The 50-mile EPZ includes portions of Alachua, Dixie, Gilchrist, Hemando, Lake, Marion, Pasco and Sumter Counties.

B. Exercise Participants

The following agencies, organizations, and units of government participated in the Crystal River Nuclear Power Plant exercise on May 29-30,2002.

STATE OF FLORIDA

Division of Emergency Management
Department of Health, Bureau of Radiation Control
Department of Transportation
Department of Environmental Protection
Department of Agriculture and Community Affairs
Department of Insurance
Department of Management Services
Department of Community Affairs
Department of Law Enforcement

RISK JURISDICTIONS

Citrus County Sheriff's Department
Citrus County Road Department
Levy County Sheriff's Department
Levy County Road Department
Levy County Health Department
Levy County School Board
Levy County Sheriffs Explorers

Levy County Emergency Medical Services (EMS)

SUPPORT JURISDICTIONS

Alachua County
Dixie County
Gilchrist County
Hernando County
Lake County
Marion County
Pasco County
Sumter County

PRIVATE/VOLUNTEER ORGANIZATIONS

Alachua County, **Levy** County Branch, American Red **Cross**
Citrus County American Red Cross
Connal Volunteer **Fire** Department
Crystal River Volunteer Fire Department
Bronson Volunteer Fire Department
Chiefland Volunteer Fire Department
Dunnellon Volunteer Fire Department
Ingless Volunteer Fire Department
Morrison Volunteer Fire Department
Otter Creek Volunteer Fire Department
Rainbow Lakes Estate Volunteer Fire Department
South Levy Volunteer Fire Department
Sowers Bluff Volunteer Fire Department
Williston Volunteer Fire Department
Yankeetown Volunteer Fire Department
Levy County Sheriffs VOICE
Chiefland Boy Scout Troop 126, North **Florida** Council
Williston **Boy** Scout Troop 420, North Florida Council

C. Exercise Timeline

Table 1, on the following page, presents the time key events and activities occurred during the plume phase of the exercise on May 29, 2002.



Table 1. Plume Phase Exercise Timeline

DATE AND SITE: May 29, 2002 – Crystal River Nuclear Power Plant

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken							
		SEOC	F-SERT	DOSE	MERL	FMTs	ENC	CITRUS COUNTY	LEVY COUNTY
Unusual Event									
Alert	0737	0748			0803	0803		0752	0748
Site Area Emergency	0833	0842			0859	0904	0833	0847	0847
General Emergency	1017	1031	1020	1020	1023	1023	1026	1032	1035
Rad. Release Started	1017	1031	1020	1020	1023	1023	1055	1032	1017
Release Terminated	On-going								
Facility Declared Operational		0748	1100	0919	0810		0955	0800	0820
Declaration Of State Of Emergency State		0852	0852				0925	1004	1000
Local								0915	0846
Exercise Terminated	1358	1402	1355	1500	1500	1400	1358	1400	1400
Early Precautionary Actions: School evacuation									0815
1st Protection Action Decision: Stay-tuned								0906	0903
1st Siren Activation								0915	0915
1st EAS or Message								0915	0915
2nd Protective Action Decision:									
Evacuate Zones: 1			1055					1052	1052
Shelter Zones: 2 & 3									
2nd Siren Activation			1100					1100	1100
2nd EAS Message			1100					1100	1100
3rd Protective Action Decision:									
Evacuate Zones: 10-mile EPZ			1340					1334	1342
3rd Siren			1340					1340	1345
3rd EAS Message			1345					1340	1345
KI Administration: Emergency Workers-- Ingest Team #1			1100			1053		1114	1050
Team #2						1058			

IV. EXERCISE EVALUATION AND RESULTS

Contained in this section are the results and preliminary findings of the evaluation of all jurisdictions **and** functional entities that participated in the May 29-30, 2002, exercise to test the offsite emergency response capabilities of State and local governments within the 10-mile EPZ around the Crystal River Nuclear Power Plant.

Each jurisdiction or functional entity was evaluated on the basis of its' demonstration of criteria delineated in exercise criteria contained in Evaluation Area Methodology, dated December 2001. Detailed information on the exercise criteria and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

A. Summary Results of Exercise Evaluation - Table 2

The matrix presented in Table 2, presents the status of all exercise criteria scheduled for demonstration during this exercise, by all participating jurisdictions and functional entities. Exercise criteria are identified by number. The demonstration status of those criteria is indicated by the use of the following letters:

- M - Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercises)
- D - Deficiency assessed
- A - ARCA(s) assessed or unresolved ARCA(s) from prior exercise(s)
- N - Not Demonstrated (Reason explained in Subsection B)

Table 2. Summary Results of Exercise Evaluation

DATE AND SITE: May 29-30,2002 – Crystal River Nuclear Power Plant

ELEMENT/Sub-Element	STATE	F-SERT	DOSE	EOF	RAD LAB	FIELD TEAMS	ENC	CITRUS	LEVY	ALACHUA
1. EMERGENCY OPERATIONS MANAGEMENT										
1.a.1. Mobilization	M	M	M	M	M	M	M	M	M	P
1.b.1. Facilities	M	M	M	M	M		M	M	M	P
1.c.1. Direction and Control	M	M	M	M			M	M	M	P
1.d.1. Communications Equipment	M	M	M	M	M	M	M	M	M	P
1.e.1. Equipment & Supplies to Support Operations	M	M	M	M	M	M	M	M	M	P
2. PROTECTIVE ACTION DECISION MAKING										
2.a.1. Emergency Worker Exposure Control		M	M		M	M		M	M	
2.b.1. Radiological Assessment and PARs Based on Available Information		M	M	M				M	M	
2.b.2. Radiological Assessment and PADs for the General Public		M	M					M	M	
2.c.1. Protective Action Decisions for Special Populations								M	M	
2.d.1. Radiological Assessment & Decision Making for Ingestion Exposure		M	M	M				M	M	
2.e.1. Rad Assessment & Decision Making for Relocation, Re-entry & Return		M	M	M				M	M	
3. PROTECTIVE ACTION IMPLEMENTATION										
3.a.1. Implementation of Emergency Worker Control					M	M		M	M	
3.b.1. Implementation of KI Decisions						M		M	M	
3.c.1. Implementation of PADs for Special Populations								M	M	
3.c.2. Implementation of PADs for Schools								M	M	
3.d.1. Implementation of Traffic and Access Control								M	M	
3.d.2. Impediments to Evacuation and Traffic and Access Control								M	M	
3.e.1. Implementation of Ingestion Decisions Using Adequate Information		M						M	M	
3.e.2. Implementation of IP Decisions Showing Strategies and Instructional Materials		M						M	M	
3.f.1. Implementation of Relocation, Re-entry and Return Decisions		M						M	M	
4. FIELD MEASUREMENT and ANALYSIS										
4.a.1. Plume Phase Field Measurement & Analysis Equipment						M				
4.a.2. Plume Phase Field Measurement & Analysis Management						M				
4.a.3. Plume Phase Field Measurements & Analysis Procedures						M				
4.b.1. Post Plume Field Measurement & Analysis						M				
4.c.1. Laboratory Operations					M					
5. EMERGENCY NOTIFICATION & PUBLIC INFORMATION										
5.a.1. Activation of Prompt Alert and Notification Systems		M						M	M	
5.a.2. Activation of Prompt Alert and Notification 15 Minute (Fast Breaker) N/A										
5.a.3. Activation of Backup Alert and Notification Systems								M	M	
5.b.1. Emergency Information and Instructions for the Public and the Media		M					M	M	M	
6. SUPPORT OPERATIONS/FACILITIES										
6.a.1. Monitoring, Decon & Registration of Evacuees/EW Monitoring & Decon								M/A*	M/A*	
6.b.1. Monitoring and Decontamination of Emergency Worker Equipment								M	M	
6.c.1. Temporary Care of Evacuees								M	M	
6.d.1. Transportation and Treatment of Contaminated Injured Individuals										

LEGEND: M = Met A = ARCA D = Deficiency P = Practice (Not for evaluation) * = See Report

B. Status of Jurisdictions Evaluated

This subsection provides information on the evaluation of each participating jurisdiction and functional entity in a jurisdiction based, issues only format. Presented below is a definition of the terms used in this subsection relative to Criterion demonstration status.

- **bleb** - Listing of the demonstrated exercise criterion under which no Deficiencies or **ARCAs** were assessed during this exercise and under which no ARCAs assessed during prior exercises remain unresolved.
- **Deficiency** - Listing of the demonstrated exercise criterion under which one or more Deficiencies was assessed during *this* exercise. Included is a description of each Deficiency and recommended corrective actions.
- **Area Requiring Corrective Actions** - Listing of the demonstrated exercise criterion under which one or more ARCAs were assessed during the current exercise or ARCAs assessed during prior exercises that remain **unresolved**. Included is a description of the ARCAs assessed during this exercise and the recommended corrective action to be demonstrated before or during the next biennial exercise.
- **Not Demonstrated** - Listing of the exercise criteria which were not demonstrated **as** scheduled during this exercise and the reason they were not demonstrated.
- **Prior ARCAs - Resolved** - Descriptions of *ARCAs* assessed during previous exercises, which were resolved in this exercise and the corrective actions demonstrated.
- **Prior ARCAs - Unresolved** - Descriptions of ARCAs assessed during prior exercises, which were not resolved in this exercise. Included is the reason the ARCA remains unresolved **and** recommended corrective **actions** to be demonstrated before or during the next biennial exercise.

The following are definitions of the two types of exercise issues, which may be discussed in this report.

- **A Deficiency** is defined in FEMA-REP-14 **as** "...an observed or identified inadequacy of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant."
- **An ARCA** is defined in FEMA-REP-14 **as** "...an observed or identified inadequacy of organizational performance **in** an exercise that is not considered, by itself, to adversely impact public health and safety."

1. STATE OF FLORIDA

1.1 State Emergency Operations Center – Plume

The State Emergency Operations Center (SEOC) was responsible for direction and control of emergency operations during the early stages of the exercise until operational control was shifted to the Forward State Emergency Response Team (F-SERT). The SEOC is a state of the art facility manned by a professional staff from the Division of Emergency Management (DEM) and other appropriate State agencies. SEOC activities were conducted in an outstanding manner and are a credit to the State of Florida.

- a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1. and 1.e.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

State Emergency Operations Center – Ingestion

The SEOC continued to support the F-SERT via teleconferences held regularly to update all counties involved in the ingestion impact of the release. SEOC staff assisted with unmet needs and sent the State Department of Agriculture representative forward to address agriculture issues.

- a. **MET:** Criteria 1.c.1. and 1.d.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

1.2 Forward State Emergency Response Team – Plume

Following the declaration of a Site Area Emergency (SAE), the SEOC initiated a Declaration of a State of Emergency and simulated the dispatching of the F-SERT to the Emergency Operations Facility (EOF) in Crystal River. The F-SERT arrived at approximately 0925. At 0955 the F-SERT and Emergency Support Function (ESF) team leaders received a situation briefing from the staff while the remainder of the team continued setting up operations within the EOF. A declaration of General Emergency (GE), accompanied with information concerning a release of radioactive material, was received at 1020. The F-SERT met with representatives from the utility, the Counties and Rad Wealth and teleconferenced with the SEOC. Protective actions were discussed and a protective action decision (PAD) was reached to evacuate zone 1 and shelter in place zones 2 and 3. The F-SERT announced that they would assume direction and control at 1100.

Coordination with the SEOC, other state agencies, Risk and Host Counties, and the utility was on going and timely. All PADs coordinated by the F-SERT were timely and consistent with plant conditions and other data available to the decision makers. Alert and notification of the public was timely and in accordance with the plans. Agriculture advisories, precautions for emergency workers, to include the issuance and ingestion of potassium iodide (KI) were all considered.

- a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., 1.e.1., 2.a.1., 2.b.1., 2.b.2., 5.a.1. and 5.b.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- e. **PRIOR ARCAs - UNRESOLVED.** NONE

Forward State Emergency Response Team – Ingestion

The State, Citrus, Levy, Alachua, Dixie, Gilchrist and Marion Counties participated in the ingestion pathway phase of the Crystal River Exercise. The ESFs participating in the ingestion exercise included the Department of Agriculture, Florida Department of Law Enforcement, Emergency Management, and the Bureau of Radiological Health.

The counties playing were intensely involved in the relocation, re-entry decision-making process with the State. The radiological impact on food, water and other ingestible items was thoroughly discussed. Embargos were in place and characterization of the release and impact on the local economy and crops were addressed. Actions taken prior to the start of the ingestion pathway portion of the exercise included placing animals on stored feed and covered water: as well as the establishment of an agricultural embargo area. Initial discussions during the ingestion exercise concerned actions to protect the public in areas that would exceed the one-year dose for the relocation protective action guidelines (PAG) and when they would start bringing in the boundary for the embargo area. A hot spot, which exceeded the one-year relocation PAG, was located in Marion County and required the relocation of individuals living in the area. Radiological health stated they would continue to monitor the area to determine when residents would be allowed to return to live. The length of time would be dependent on the isotopic mix.

The Counties discussed re-entry procedures. Traffic and access control points were set up throughout the area to prevent unauthorized access.

- a. MET Criteria 1.c.1., 2.a.1., 2.d.1., 2.e.1., 3.e.1., 3.e.2., 3.f.1. and 5.b.1.
- b. DEFICIENCY NONE
- c. AREAS REQUIRING CORRECTIVE ACTION: NONE
- d. NOT DEMONSTRATED: NONE
- e. PRIOR ARCAs - RESOLVED: NONE
- f. PRIOR ARCAs - UNRESOLVED: NONE

1.3 Dose Assessment – Plume and Ingestion

The Dose Assessment staff understood their responsibilities, followed plans, and successfully demonstrated their ability to provide meaningful technical information. Their principal functions and responsibilities during the plume phase included conducting independent accident analyses that included the calculation and assessment of radiological doses, and the development and implementation of appropriate protective actions. The dose assessment personnel worked well with the utility dose assessment staff in corroborating information, and coordinating with the Field Team Director (FTD) in collecting independent, useful data that could be used by the state. The dose assessment staff used a computer program different from that of the utility, yet derived similar results, indicating that both had achieved proper dose assessment values. During the ingestion phase, the dose assessors corroborated information and advised the FTD in collecting meaningful and useful environmental samples to determine reentry and relocation criteria for the state's use. Members of the dose assessment staff were professional and displayed a positive attitude.

- a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., 1.e.1., 2.a.1., 2.b.1., 2.b.2., 2.d.1., and 2.e.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs – RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

1.4 Emergency Operations Facility – Plume

The utility operator’s EOF is an excellent facility *from which* all participating organizations can effectively manage ongoing emergency operations. Communications, coordination, and the flow of technical information between the utility operator and all participating Federal, State and local government officials were outstanding.

Independent accident analyses were successfully and professionally demonstrated, to include radiological dose assessment, and providing direction and control *for* the State’s radiological field monitoring teams. **The** determinations resulting *from* these analyses were coordinated *with* the analyses conducted by the utility operator and representatives of the Nuclear Regulatory Commission (NRC), and were utilized *to* develop, formulate, **and** implement appropriate protective actions.

All of the State and local government officials who were deployed to the EOF were well trained, followed applicable procedures; and overall, they performed their respective responsibilities in an efficient and professional manner.

- a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., 1.e.1. and 2.b.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs – RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

Emergency Operations Facility – Ingestion

The EOF was utilized as the Central Command Center from which all State, local government and responding Federal agencies conducted emergency management operations. The SEOC, located in Tallahassee, actively participated in this process by means of teleconferencing.

All applicable State agencies, in close coordination with the NRC [the Lead Federal Agency (LFA)], and the Advisory Team for food, health and the environment (A-Team), comprised of officials representing the U. S. Environmental Protection Agency, the U.S. Department of Agriculture (USDA), Health and Human Services (HHS), and the Food and Drug Administration (FDA), conducted a thorough technical assessment of all of the environmental considerations within the 50-mile-ingestion pathway zone, and implemented appropriate protective actions, to include relocation of the public where necessary.

State officials developed a comprehensive recovery and re-entry plan, with consensus of all of the affected local governments, and the LFA, and the A-Team. State and local government officials who deployed to the EOF were knowledgeable, well trained, and carried out their respective responsibilities, consistent with the policies, plans and procedures specified in the State Radiological Emergency Response Plan in a professional manner.

- a. **MET:** Criteria 1.c.1., 2.d.1. and 2.e.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION** NONE
- d. **NOT DEMONSTRATED** NONE
- e. **PRIOR ARCAs –RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

15 Mobile Emergency Radiological Laboratory - Plume

The Mobile Emergency Radiological Laboratory (MERL) and the Sample Preparation Van (SPV) were pre-positioned in the parking lot at the EOF and were operational at 0810. By 0905 three field teams were briefed and deployed by the MERL Supervisor. The field teams were turned over to the FTD at 0924. **Good** contamination control procedures were demonstrated with the set up of a hotline comprised of a hot zone, a buffer zone and a clean zone to process both incoming personnel and field team samples. The SPV staff demonstrated how they would prepare the filter paper, iodine cartridges and swipe samples for the MERL so that cross contamination would not occur. The

MERL demonstrated the gamma spectrometry of filter papers and iodine cartridges. All personnel demonstrated knowledge of the plans and use of procedures.

- a. **MET:** Criteria 1.a.1., 1.b.1., 1.d.1., 1.e.1., 2.a.1., 3.a.1., and 4.c.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- a. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs – RESOLVED:** NONE
- f. **PRIOR ARCAs – UNRESOLVED:** NONE

Mobile Emergency Radiological Laboratory – Ingestion

For the ingestion pathway exercise the MERL and the SPV were located at the Levy County Sheriff's Office, Inglis sub-station and were operational at 0730. At 0808, the MERL supervisor gave a thorough briefing to the three field teams, the Levy County Agriculture Department personnel and the Radio Amateur Civil Emergency Services (RACES) operators. At 0833 the field teams were turned over to the FTD for their assignments. Throughout the day the RACES operators maintained communications links with the MERL, the BOF and the three field teams. The RACES operators were able to maintain communications to locations where the Department of Health radio and the local radio did not work.

The SPV staff demonstrated the capability to prepare samples of grass, water and soil for counting by MERL. The MERL demonstrated the capability for gamma spectrometry for samples of soil, water and grass. Through an interview the SPV and the MERL staff demonstrated the capability to do sample preparation and gamma spectrometry for samples of watermelon, peanuts and milk. Both the SPV and the MERL demonstrated good contamination control procedures. All activities were conducted in accordance with plans, procedures and the extent of play agreement.

- a. **MET:** Criteria 1.d.1., 2.a.1., 3.a.1. and 4.c.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs – RESOLVED:** NONE

- f. **PRIOR ARCAs – UNRESOLVED: NONE**

1.6 Radiological Field Monitoring Teams – Plume

The State Field Monitoring Teams (FMT) demonstrated the criteria that pertained to their assigned activities, as modified by the extent-of-play (EOP) agreement. The FMTs were pre-positioned at the EOF in accordance with the EOP. The team's effective use of their equipment and implementation of procedures ensured that each task given them was fully accomplished. The FMTs demonstrated both primary and backup communication systems. Team members knew their exposure limits and turn back values; were properly equipped with dosimetry and simulated potassium iodide (KI) supplies; correctly performed equipment inventory and instrumentation checks; and conducted sampling activities in accordance with their procedures and promptly communicated results to the Field Team Coordinator.

- a. **MET: Criteria 1.a.1., 1.d.1., 1.e.1., 2.a.1., 3.a.1., 3.b.1., 4.a.1., 4.a.2. and 4.a.3.**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs – RESOLVED: NONE**
- f. **PRIOR ARGAS – UNRESOLVED: NONE**

Radiological Field Monitoring Teams – Ingestion

During the ingestion pathway phase of the exercise, **the** FMTs demonstrated the ability **to** continuously monitor the area they were assigned, and limit their external exposure **to** radiation while completing their assignments. Their knowledge and ability to implement the procedures for determining field radiation measurements and the appropriate use of field monitoring equipment previously displayed in the plume phase was again well demonstrated. The FMTs successfully demonstrated the ability to obtain vegetation, soil milk, and feed samples during the ingestion pathway sampling.

- a. **MET: Criteria 1.d.1., 2.a.1., 3.a.1., 3.b.1. and 4.b.1**
- b. **DEFICIENCY: NONE**
- e. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- a. **NOT DEMONSTRATED: NONE**

- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

1.7 **Emergency News Center – Plume**

The Emergency News Center (ENC) staff work area and media briefing room are well equipped for accomplishing the public information and media management activities required for a radiological emergency at Crystal River. The ENC space and equipment are provided and managed by the Crystal River Nuclear Plant (CRNP) Communications Director for the joint public information officers from State and Federal agencies, Levy and Citrus Counties. The facility provides very effective Communications and coordination capability. The cooperation and teamwork were particularly noteworthy. The staffs of the various agencies functioned smoothly and professionally to accomplish all required demonstration criteria.

- a. **MET: Criteria 1.a.1., 1.b.1., 1.c.1, 1.d.1, 1.e.1 and 5.b.1**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED:**

Issue No.: 17-00-5.b.1.-A-01

Condition: The State Emergency Response Team News Release #3 did not provide accurate emergency information for the public. The Citrus County Alert and Notification sequence had been initiated at 1135 with Emergency Alert System (EAS) Message 10a, issued which directed the evacuation of Zone 1 and shelter-in-place for Zones 2 and 3. At 1200 the F-SERT press release #3 was distributed announcing a GE and then stating (“The public is in no danger but should stay tuned to any changes in plant conditions.”) The release made no mention of the protective action ordered in Citrus and Levy Counties.

Possible Cause: The State Public Information Officer (PIO) at the ENC hurriedly issued a message without obtaining the necessary review signatures as stated in the State plan, Annex G, III -A -4. Following established procedures may have prevented the issuance of the news release.

Reference: The State Plan, Annex G, III. 3.

Effect: The residents of Zone 1 were already notified that evacuation had been

ordered and the residents of Zones 2 and 3 told to shelter-in-place. The utility had reached the Protective Action Guidance (PAG) range for significant offsite releases. Public confusion could have resulted from the incorrect press release and could have altered the public response to the evacuation order and in-place-sheltering order.

Recommendation: Train the State ENC staff to follow internal procedures when issuing press releases transmitting information to the public. Further, when pre-scripted messages are being used, extra care and attention needs to be taken to review the proposed press release to assure that it correctly conveys the desired information.

Corrective Action Demonstrated: Re-demonstrated at the Turkey Point Nuclear Power Plant Exercise on February 21, 2001. The State PIO followed the correct internal procedures of verifying pre-scripted news releases with the State Coordinating Officer prior to distribution to the press. The news releases were accurate and timely with the proper protective emergency information included for the public.

f. **PRIOR ARCAs - UNRESOLVED: NONE**

Emergency News Center – Ingestion

The ENC continued to be well managed and supported by the utility public information team, but the primary focus of activity was on State and local efforts to deal with the ingestion pathway response and recovery. News releases and news conferences were timely and effectively informed the media and public of important information regarding continuing risks and progress toward recovery. The individual agencies continued to function as a well-integrated team with required criterion successfully demonstrated.

- a. **MET:** Criteria 1.e.1. and 5.b.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** SEE DAY 1
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

2. RISK JURISDICTIONS

2.1 CITRUS COUNTY

2.1.1 Emergency Operations Center

The Emergency Operations Center (EOC) is co-located with the 911 center. The Director effectively managed emergency operations. Participants included the **County Administrator**, who approved all PADs, the Chairman of the County Commission and representatives from State agencies and Florida Power Corporation. The staff was well trained and successfully performed assigned functions. The operations officer conducted frequent briefings and input was sought from EOC staff on their activities. Although operations were not hindered during the exercise, space in the EOC is at a premium. (See F-SERT for ingestion activities).

- a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., 1.e.1., 2.a.1., 2.b.1., 2.b.2., 2.c.1., 2.d.1., 2.e.1., 3.a.1., 3.b.1., 3.c.1., 3.c.2., 3.e.1., 3.e.2., 3.f.1., 5.a.1., 5.a.3. and 5.b.1.
- b. **DEFICIENCY NONE**
- e. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.1.2 Traffic and Access Control Points

Two deputies from the Citrus County Sheriffs Office were interviewed during the out-of-sequence activities on 13 May. The deputies were issued packets that included appropriate dosimetry, simulated KI, recording sheets and instructions. Both Deputies were very familiar with the use and reading of the dosimeters, Thermoluminescent dosimeter (TLD) and proper procedures for ingestion of KI. Communications would be maintained with their supervisor for additional instructions related to evacuation. Traffic control procedures, to include impediments, were discussed; the deputies knew the correct location and routing of evacuees to the reception center and had maps to assist the evacuees as needed. This was a very good demonstration of the deputies' knowledge of their plans and responsibilities.

- a. **MET:** Criteria 1.d.1., 3.a.1., 3.b.1., 3.d.1. and 3.d.2.

- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- a. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.1.3 Emergency Worker & Equipment Monitoring and Decontamination

The Citrus County Sheriff's Department, Hazardous Materials Section was in charge of emergency worker and equipment monitoring and decontamination, which was demonstrated at the Citrus County Army National Guard Armory. The Crystal River and Connal Volunteer Fire Departments assisted in the demonstration. All personnel wore appropriate personal protective equipment (PPE) and had correct dosimetry, recording forms and simulated KI. All were knowledgeable of their personal dosimetry use and requirements, call-in and turn-back values. Dosimetry was read and recorded every 30 minutes using a buddy system. Three vehicles and one emergency worker were successfully monitored and decontaminated. The second emergency worker was not properly processed (see below).

- a. **MET** Criteria 3.a.1. and 6.b.1.
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION:**

Issue Number: 02-17-6.a.1-A-01

Condition: Vehicle two was found contaminated, decontaminated, re-monitored and found to still be contaminated. The emergency worker who was driving was instructed to park the car and follow the monitor. The monitor took his personal possessions, bagged and tagged them and then led him immediately to the decontamination shower while having never monitored his person and having no idea if he was in fact contaminated or where the contamination might be.

Possible Cause: There was confusion understanding the procedures. The first team thought all emergency workers in a contaminated vehicle would be fully decontaminated regardless, while the second team thought all emergency workers in a contaminated vehicle would be monitored before exiting the contaminated vehicle.

Reference: NUREG-0654 K.5.b; Extent of Play Criterion 6.a.1; and HazMat SOP 23 page, 7 number 9.

Effect: The total showering decontamination process of every emergency worker in a contaminated vehicle would potentially affect the number of workers available in the field to help direct and protect the public. This could cause a slowdown of processing not **only** because of **the time** taken to shower each person and re-monitor, but because of the waiting for showers for those persons who **truly** are contaminated but cannot be processed, or may not be contaminated at all and **are** waiting for showers.

Recommendation: Monitor emergency workers in contaminated vehicles and decontaminate only as appropriate rather than total shower decontamination of every emergency worker in a vehicle; i.e. a dirty hand or foot would not require a **full** shower; a vehicle dirty only on the bumper may have a totally clean driver. Train all emergency workers in the same **manner** so that contaminated individuals are processed according to the procedures indicated above.

Schedule of corrective action: Training will be given to all individuals doing monitoring and decontamination. Criterion 6.a.1. Emergency worker monitoring and decontamination will be re-demonstrated at the next scheduled Crystal River exercise in 2004.

- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.1.4 Protective Action for Schools

The demonstration of protective actions for schools within the 10-mile EPZ was conducted by evaluating actions taken by the school board representative in the County EOC and interviews with staff from Crystal River Primary School and Crystal River High School. All interviewed were knowledgeable of their school's evacuation plans, duties, and responsibilities. The staffs interviewed at these schools are capable of taking the necessary actions to protect the students and staff at their schools.

- a. **MET: Criterion 3.c.2**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**

- f. **PRIOR ARCAs - UNRESOLVED** NONE

2.1.5 Evacuee Monitoring, Decontamination, Registration and Temporary Care

Evacuee monitoring, decontamination, registration and temporary care was demonstrated by the Crystal River and Connal Volunteer Fire Departments, County Hazmat teams and the Citrus County American Red Cross (ARC). A special thanks goes to the numerous citizen volunteers available to act as evacuees for the demonstration. All personnel wore appropriate PPE, had the correct number and correct types of dosimetry and were fully aware of the use and requirements of their equipment. All personnel involved were knowledgeable of their duties and should be commended for a good demonstration.

The layout of the facility was appropriate to process and care for the evacuees while preventing cross contamination of individuals. In the future, the police academy next door will be used for the decontamination activities, which will enhance an already good operation and make it a great one.

- a. **MET: Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., 1.e.1., 3.a.1., 6.a.1., and 6.c.1.**
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.2 LEVY COUNTY

2.2.1 Emergency Operations Center

The EOC is a modern facility that was staffed with well-trained, dedicated professionals who were involved throughout the exercise. The County Administrator and Chairman of the County Council were present in the EOC for all of the exercise and participated in the decision making process. The EOC Director and Assistant Director provided excellent direction and control, coordinated consistently with Citrus County and the F-SERT, involved the staff in the formulation and implementation of the shelter-in-place and evacuation PADs, and conducted informative EOC briefings and agency updates. The Director encouraged the staff to be pro-active in resolving problems and clarifying issues. The State Area Coordinator, the utility representative, and the radiological health representative provided valuable input in making critical decisions. Mobilization of the

staff, alerting and notification of the public, and rumor control **were** well demonstrated. Even though this exercise was fast paced and complicated by events of an earthquake and closed roads, the staff remained on top of **issues**, followed their plan **and** executed their duties efficiently. (See F-SERT **for** ingestion activities).

- a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., 1.e.1., 2.a.1., 2.b.1., 2.b.2., 2.c.1., 2.d.1., 2.e.1., 3.a.1., 3.b.1., 3.c.1., 3.c.2., 3.e.1., 3.e.2., 3.f.1., 5.a.1., 5.a.3. and 5.b.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.23 Emergency Worker & Equipment Monitoring and Decontamination

The emergency worker and equipment decontamination demonstration was **performed** at Lebanon Station off State Highway 19. Numerous volunteer **fire** departments participated in the drill. Three vehicles and two **workers** were processed at **the** demonstration. The demonstration, with **the** exception of emergency worker monitoring, went very well. The procedures used to control contamination when processing the emergency workers out of the hotline need to be readdressed.

- a. **MET:** Criteria 3.a.1. and 6.b.1.
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:**

Issue Number: 02-14-6.a.1.-A-02

Condition: The established radiological monitoring procedures used to process an emergency worker out of the contamination control area were not followed. The emergency worker was not monitored correctly and thoroughly before being allowed to leave the contamination control line, only the hands and face were checked for contamination and not **feet**, head and/or torso. No attempt **was** made to ensure the rest *of the* body was free of contamination.

Possible Cause: The procedures call for complete monitoring of workers from head to toe before being allowed out of the hot zone. These procedures were not followed.

Reference: NUREG-0654 K.5.b., Criterion 6.a.1. and Levy County Emergency Worker Standard Operating Guidelines.

Effect: The failure to check the entire body surface area of **an** emergency worker who was inside a possible contaminated area could potentially spread contamination in the designated **clean** area.

Recommendation: Supervisors should ensure that existing exit monitoring procedures for the processing of emergency workers out of the hot zone are followed. Retrain the response team members in the correct monitoring procedure and schedule periodic refresher training.

Schedule of Corrective Action: All personnel doing monitoring and decontamination will be trained. Criterion 6.a.1. will be re-demonstrated at the next scheduled Crystal River exercise in 2004.

- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.3 Traffic and Access Control Points

The Levy County Sheriffs Department and Levy County Road Department demonstrated the establishment of traffic and access control points (T&ACP) on Highway 19 at Lebanon Station. Two T&ACPs were established. **All** personnel were fully acquainted with the procedures and purpose of the T&ACPs, as well **as** radiological exposure control, dosimetry and turn-back values. The Levy County Road Department provides traffic control devices needed to establish the T&ACPs. Signage **was** in place to direct individuals to shelters and registration points. This was an excellent demonstration of traffic and access control points.

- a. **MET:** Criteria 1.d.1., 3.a.1., 3.d.1. and 3.d.2.
- b. **DEFICIENCY** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

2.2.4 Evacuee Monitoring, Decontamination, Registration and Temporary care

Numerous Volunteer Fire Departments and various other volunteer organizations (see Private/Volunteer Organizations portion of report) demonstrated this activity at Bronson High School. The facility was well prepared and laid out to prevent cross contamination of evacuees. All personnel wore appropriate PPE and dosimetry. They were well aware of equipment use and requirements including time checks and turn back values. All procedures were established, posted and followed. The ARC demonstrated registration and temporary care. There was a separate, co-located facility for special needs individuals. Ambulance #110 personnel simulated bringing in a special needs resident and the monitoring and registration process was demonstrated. This was a very good demonstration and all individuals should be commended for a job well done.

- a. **MET:** Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., 1.e.1., 3.a.1., 6.a.1. and 6.c.1.
- b. **DEFICIENCY NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

3. SUPPORT JURISDICTION

3.1 ALACHUA COUNTY

3.1.1 Emergency Operations Center

The EOC is a modern, state of the art facility, fully capable of supporting sustained response operations. The ability of Alachua County, under the Emergency Manager and his staff, to meet the requirements of State and County plans and procedures was successfully demonstrated through an interview with the emergency management staff while the EOC was in a monitoring mode. When operational, the EOC is organized along the incident command (ICS) structure with 17 ESFs lead by representatives of designated County departments and agencies. This organizational structure is augmented and supported by representatives from a wide spectrum of community organizations (e.g., University of Florida, United Way, etc.). There is detailed guidance to support each ESF representative on how to execute EOC duties. The County has a fully redundant communications capability and is able to maintain contact with the State and other counties by Internet (TRACKER 2000), landline, cell phone and radio. The County also

maintains an emergency management website which provides current information on ongoing emergencies, as well as public safety information (e.g., shelter locations). The Emergency Manager and staff members are highly professional, knowledgeable of their responsibilities, and are pro-active in their approach to safeguarding the interests of the public.

a. MET: Criteria 1.a.1., 1.b.1., 1.c.1., 1.d.1., and 1.e.1. (For practice only)

b. DEFICIENCY: NONE

c. AREAS REQUIRING CORRECTIVE ACTION: NONE

d. NOT DEMONSTRATED: NONE

e. PRIOR ARCAs – RESOLVED: NONE

f. PRIOR ARCAs – UNRESOLVED: NONE

4. SUMMARY OF AREAS REQUIRING CORRECTIVE ACTION

4.1 2002 ARCAs

4.1.1 17-02-6.a.1.-A-01 Citrus County Emergency Worker Decontamination

Condition: Vehicle two was found contaminated, decontaminated, re-monitored and found to still be contaminated. The emergency worker who was driving was instructed to park the car and follow the monitor. The monitor took his personal possessions, bagged and tagged them and then led him immediately to the decontamination shower while having never monitored his person and having no idea if he was in fact contaminated or where the contamination might be.

Possible Cause: There was confusion understanding the procedures. The first team thought all emergency workers in a contaminated vehicle would be fully decontaminated regardless, while the second team thought all emergency workers in a contaminated vehicle would be monitored before exiting the contaminated vehicle.

Reference: NUREG-0654 K.5.b; Extent of Play Criterion 6.a.1; and HazMat SOP 23 page 7 number 9.

Effect: The total showering decontamination process of every emergency worker in a contaminated vehicle would potentially affect the number of workers available in the field to help direct and protect the public. This could cause a slowdown of processing not only because of the time taken to shower each person and re-monitor, but because of the waiting for showers for those persons who truly *are* contaminated but cannot be processed, or may not be contaminated at all and are waiting for showers.

Recommendation: Monitor emergency workers in contaminated vehicles and decontaminate only as appropriate rather than total shower decontamination of every emergency worker in a vehicle; i.e. a dirty hand or foot would not require a full shower; a vehicle dirty only on the bumper may have a totally

clean driver. Train all emergency workers in the same manner so that contaminated individuals are processed according to the procedures indicated above.

Schedule of Corrective Action: Training will be given to all individuals doing monitoring and decontamination. Criterion 6.a.1. Emergency worker monitoring and decontamination will be re-demonstrated at the next scheduled Crystal River exercise in 2004.

**4.1.2 17-02-6.a.1.-A-02
Levy county
Emergency Worker
Decontamination**

Condition: The established radiological monitoring procedures used to process an emergency worker out of the contamination control area were not followed. The emergency worker was not monitored correctly and thoroughly before being allowed to leave the contamination control line, only the hands and face were checked for contamination and not feet, head and/or torso.

Possible Cause: The procedures call for complete monitoring of workers from head to toe before being allowed out of the hot zone. These procedures were not followed.

Reference: NUREG-0654 K.5.b., Criterion 6.a.1. and Levy County Emergency Worker Standard Operating Guidelines.

Effect: The failure to check the entire body surface area of an emergency worker who was inside of a possible contaminated area could potentially spread contamination in the designated clean area..

Recommendation: Supervisors should ensure that existing exit monitoring procedures for the processing of emergency workers out of the hot zone are followed. Retrain the response team members in the correct monitoring procedure and schedule periodic refresher training.

Schedule of Corrective Action: All personnel doing monitoring and decontamination will be trained. Criterion 6.a.1. will be re-demonstrated at the next scheduled Crystal River exercise in 2004.

4.2 PRIOR ARCAs RESOLVED

4.2.1 17-00-5.b.1.-A-01 Emergency News Center

Condition: The State Emergency Response Team News Release #3 did not provide accurate emergency information for the public. The Citrus County Alert and Notification sequence had been initiated at 1135 with Emergency Alert System (EAS) Message 10a, issued which directed the evacuation of Zone 1 and shelter-in-place for Zones 2 and 3. At 1200 the F-SERT press release #3 was distributed announcing a GE and then stating ("The public is in no danger but should stay tuned to any changes in plant conditions.") The release made no mention of the protective action ordered in Citrus and Levy Counties.

Possible Cause: The State PIO at the ENC hurriedly issued a message without obtaining the necessary review signatures as stated in the State plan, Annex G, III -A -4. Following established procedures may have prevented the issuance of the news release.

Reference: The State Plan, Annex G, III. 3.

Effect: The residents of Zone 1 were already notified that evacuation had been ordered and the residents of Zones 2 and 3 told to shelter-in-place. The utility had reached the Protective Action Guidance (PAG) range for significant offsite releases. Public confusion could have resulted from the incorrect **press release** and could have altered the public response to the evacuation order and in-place-sheltering order.

Recommendation: Train the State ENC staff to follow internal procedures when issuing press releases transmitting information to the public. Further, when pre-scripted messages are being used, extra care and attention needs to be taken to review.

Corrective Action Demonstrated: Re-
demonstrated at the Turkey Point Nuclear Power
Plant Exercise on February 21, 2001. The State PIO
followed the correct internal procedures of verifying
pre-scripted news releases with ~~the~~ State
Coordinating Officer prior to **distribution** to the
press. The news releases were accurate **and** timely
with the proper protective emergency information
included for the public.

APPENDIX 1

ACRONYMS AND ABBREVIATIONS

The following is a list of the acronyms and abbreviations, which may have been used in this report.

ARC	American Red Cross
ARCA	Area Requiring Corrective Action
A&N	Alert and Notification
ANS	Alert and Notification System
CFR	Code of Federal Regulations
CPM	Counts Per Minute
CRNP	Crystal River Nuclear Plant
DEM	Division of Emergency Management
DEIHS	Department of Health and Human Services
DOC	Department of Commerce
DOE	Department of Energy
DOI	Department of the Interior
DOT	Department of Transportation
DRD	Direct Reading Dosimeter
EAS	Emergency Alert System
EEM	Exercise Evaluation Methodology
EMS	Emergency Medical Services
ENC	Emergency News Center
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Extent of Play
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
ESF	Emergency Support Function
FAA	Federal Aviation Administration
FAC	Federal Advisory Committee
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FR	Federal Register
F-SERT	Forward-State Emergency Response Team
FMT	Field Monitoring Teams
FTD	Field Team Director
GAR	Governor's Authorized Representative

GE	General Emergency
HHS	Health and Human Services
ICS	Incident Command System
IPZ	Ingestion Pathway Zone
KI	Potassium Iodide
LFA	Lead Federal Agency
mR	milliroentgen
mR/h	milliroentgen per hour
MERL	Mobile Emergency Radiological Laboratory
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>
OEM	Office of Emergency Management
ORO	Offsite Response Organization
PAD	Protective Action Decision
PAG	Protective Action Guide
PAR	Protective Action Recommendation
PIO	Public Information Officer
PPE	Personal Protective Equipment
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Services
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
R/h	Roentgen(s) per hour
SAE	Site Area Emergency
SEOC	State Emergency Operations Center
SPV	Sample Preparation Vehicle
SOP	Standard Operating Procedure
TCP	Traffic Control Point
T&ACP	Traffic and Access Control Point
TLD	Thermoluminescent Dosimeter
USDA	U.S. Department of Agriculture

APPENDIX 2.

EXERCISE: EVALUATORS

The following is a list of the personnel who evaluated the Crystal River Nuclear Power Plant exercise on May 29-30, 2002. The organization represented by each evaluator is abbreviated below.

EPA	▪ Environmental Protection Agency
FDA	▪ Food and Drug Administration
FEMA	▪ Federal Emergency Management Agency
ICF	▪ ICF Consultants, Inc.
NRC	▪ Nuclear Regulatory Commission
USDA	▪ United States Department of Agriculture

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
Chief Evaluator	Helen Wilgus	FEMA
STATE OF FLORIDA		
State Emergency Operations Center	Dave Moffet	ICF
Forward State Emergency Response Team	Joseph Canoles Rick Button	FEMA EPA
Emergency News Center	Brett Kriger Eddie Hickman	ICF FEMA
Radiological Field Monitoring Team #1	Tommy Brown	ICF
Radiological Field Monitoring Team #2	Bill Neidermeyer	ICF
Dose Assessment	Harry Harrison	ICF
Mobile Radiological	Reggie Rogers	ICF
Emergency Operations Facility	Robert Trojanowski	NRC
CITRUS COUNTY		
Emergency Operations Center	Larry Robertson Ron Van	FEMA ICF
Schools	Tom Trout	FDA

Traffic Control Points	Tom Reynolds	FEMA
Emergency Worker & Decontamination	Helen Wilgus Tom Reynolds	FEMA FEMA
Emergency Worker Equipment	Helen Wilgus Tom Reynolds	FEMA FEMA
Evacuee Monitoring & Decontamination	Helen Wilgus Tom Reynolds	FEMA FEMA
Temporary Care	Helen Wilgus Tom Reynolds	FEMA FEMA

LEVY COUNTY

Emergency Operations Center	Robert Perdue Michael Dolder	FEMA FEMA
Emergency Worker Decontamination	Helen Wilgus Tom Reynolds	FEMA FEMA
Traffic Control Points	Helen Wilgus	FEMA
Evacuee Monitoring & Decontamination	Helen Wilgus Tom Reynolds	FEMA FEMA
Congregate Care	Helen Wilgus	FEMA

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APPENDIX 3.

EXERCISE CRITERION AND EXTENT-OF-PLAY AGREEMENT

This appendix lists the exercise criteria scheduled for demonstration in the **Crystal** River Nuclear Power Plant exercise on May 29-30,2002 and the extent-of-play agreement approved by **FEMA** Region **IV**.

A. Exercise Criterion

Attached are the specific radiological emergency preparedness criteria scheduled for demonstration during this exercise.

B. Extent-of-Play Agreement

The Extent-of-play agreement on **the** following pages was submitted by **the** State of Florida, **and** was approved by FEMA Region IV.

1. EMERGENCY OPERATIONS MANAGEMENT

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)

EXTENT OF PLAY:

Citrus: EOC personnel will be prepositioned. EOF personnel will report around 10:00 AM, depending on time SAE is declared.

Levy: **Six** personnel will be prepositioned at the EOC, the balance will await call out. EOF personnel will report at approximately 10:00 AM, depending on **SAE**.

State: SEOC personnel will be in place at 9:00 AM in anticipation of the notification of a Site Area Emergency.

- **FSERT:** Will preposition at the EOF **at** approximately 8:30 AM **in** anticipation of the EOF being declared operational
- **DOH/BRC:** Will preposition field teams, the mobile laboratory and the sample preparation vehicle. EOF personnel will arrive within one hour after the Alert emergency classification declaration.

1.b –Facilities:

Criterion 1.b.1: Facilities are sufficient to **support** the emergency response. (NUREG-0654, H.3)

EXTENT OF PLAY:

Citrus: In agreement

Levy : In agreement

State: In agreement

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)

EXTENT OF PLAY:

Citrus: In Agreement
Levy: In Agreement
State and FSERT: In Agreement

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-0454, P.1,2)

EXTENT OF PLAY:

Citrus: In Agreement
Levy: in Agreement
FSERT: In Agreement

DOH/BRC: Will use communication equipment as stated in SOP 3. Telephones can also be used for communication with the mobile laboratory.

1.e -- Equipment and Supplies to Support Operation:

Criterion 1.e.1 : Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0454, H.7, 10; J.10.a, b, e, J.11; K.3.a)

EXTENT OF PLAY:

Citrus: Candy will be substituted for KI and paper for TLDs, dosimeters will be checked prior to the exercise.

Levy: Candy will be substituted for KI and paper for TLDs, dosimeters will be checked prior to the exercise.

FSERT: In Agreement

- **DOH/BRC:** Will use equipment and supplies **as stated** in the SOP's. TLD's will be checked and candy will be used in the field to simulate KI.

2. PROTECTIVE ACTION DECISION MAKING

2.a – Emergency Worker Exposure Control:

Criterion 2.a.1: OROs use a decision making process, considering relevant factors and appropriate coordination, to ensure 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. (NUREC-8654, K.4, J.10.e, f)

EXTENT OF PLAY

Citrus: In Agreement

Levy: In Agreement

FSEKT: In Agreement

- **DOH/BRC:** Will use dosimetry and instrumentation as stated in the SOP'S

2.b- Radiological Assessment and Protective Action Recommendations and Derisions for the Flume Phase of the Emergency:

Criterion 2.h.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)

EXTENT OF PLAY:

Citrus: In Agreement

Levy: In Agreement

FSERT: In Agreement

- **DOH/BRC:** Will use RASCAL dose assessment code as stated in the SOP's

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

EXTENT OF PLAY:

Citrus: In Agreement
Levy: In Agreement
FSERT: In Agreement

- **DOH/BRC:** Will use RASCAL dose assessment code as stated in the SOP'S

2.c --Protective Action Decisions for 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)

EXTENT OF PLAY:

Citrus: In Agreement
Levy: In Agreement

2.d – Radiological Assessment and Decision-Making for the Ingestion Exposure Pathway:

Criterion 2.d.1 : Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO planning criteria. (NUREG-0654, J.11)

EXTENT OF PLAY:

Citrus: Will be demonstrated through the Table Top exercise on May 30.

Levy: The County Agricultural Agent, through a tabletop exercise, will discuss the appropriate actions and procedures that must be taken in conjunction with State and local officials,

State and FSERT: Will be demonstrated through the Table Top (5/30)

- **DOH/BRC:** Will use dose assessment as stated in the SOP's

2.e – Radiological Assessment and Decision-Making Concerning Relocation, Reentry, and Return:

Criterion 2.e.1: Timely relocation, re-entry, 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; M.1)

EXTENT OF PLAY:

Citrus: Will be discussed as part of the tabletop exercise

Levy: Will be discussed as part of the tabletop exercise

State and FSERT: Will be discussed as part of the tabletop exercise

- **DOH/BRC:** Will use dose assessment as stated in the SOP's

3. PROTECTIVE ACTION IMPLEMENTATION

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)

EXTENT OF PLAY:

Citrus: Will demonstrate this objective during the emergency wash down drill on May 13, 2002 at 7 PM at the Crystal River National Guard Armory. Emergency workers will receive the appropriate dosimeter as specified in the REP Plan. This will be done out of sequence.

Levy: Will be demonstrated at the wash down on May 16 at 6:30 PM at Lebanon Station. This will be done out of sequence.

DOH/BRC: Will use dosimetry and instrumentation as stated in the SOP's

3.b -- Implementation of KI Decision:

Criterion 3.b.1 : KI and appropriate instructions are available should a decision to recommend use of KI be made. Appropriate record keeping of the administration of KI for emergency workers and institutionalized individuals (not the general Public) is maintained, (NUREG-0654, J.10.e)

EXTENT OF PLAY:

Citrus: Will demonstrate the ability to issue KI to one emergency worker on May 13, 2002 during the emergency wash down drill at 7 PM at the Crystal River National Guard Armory, Candy will be used for KI and paper for TLDs. This will be done out of sequence.

Levy: Will demonstrate this during the wash down on May 16 at 6:30 PM at Lebanon Station. This will be done out of sequence.

DOH/BRC: Will use potassium iodine as stated in the SOP's

3.c -- Implementation of Protective Actions for Special Populations:

Criterion 3.c.1 : Protective action decisions are implemented for special populations other than schools within areas subject to protective actions. (NUREG-0454, J.10.c.d.g)

EXTENT OF PLAY:

Citrus: A current list of special needs population will be provided to the Citrus County evaluator for evaluation. Evacuation/Relocation requirements will be demonstrated through discussions at the EOC, based on the scenario and county implementation procedures.

Levy: In agreement same as above.

Criterion 3.c.2: OROs/school officials decide upon and implement protective actions for schools. (NUREG-0654, J.10.c., d, g)

EXTENT OF PLAY:

Citrus: In agreement, two schools will be visited out of sequence between 9:00 AM and 2:00 PM on May 14th.

Levy: N/A

3.d – Implementation of Traffic and Access Control.

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)

EXTENT OF PLAY:

Citrus: Will demonstrate this objective in conjunction with the emergency wash down drill on May 13, 2002 at 7 PM at the Crystal River National Guard Armory. This will be out of sequence.

Levy: Will demonstrate this objective in conjunction with the wash down at Lebanon Station on May 16 at 6:30 PM. This will be done **out** of sequence.

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

EXTENT OF PLAY:

Citrus: In Agreement

Levy: In Agreement

3.e – Implementation of Ingestion Pathway Decisions:

Criterion 3.e.1: The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, **milk**, and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions. (NUREG-0654, J.9, 11)

EXTENT OF PLAY:

Citrus: In Agreement

Levy: In Agreement

State and FSERT: In Agreement

- **DOH/BRC:** In Agreement

Criterion 3.e.2: Appropriate measures, strategies, and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk, and agricultural production.

(NUREG-0654, J.9, 11)

EXTENT OF PLAY:

Citrus: In Agreement
Levy: In Agreement
State and FSERT: In Agreement

DOH/BRC: In Agreement

3.f – Implementation of Relocation, Re-entry, and Return Decisions:

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

EXTENT OF PLAY:

Citrus: in Agreement
Levy: In Agreement
State and FSERT: In Agreement

DOH/BRC: In Agreement

4. FIELD MEASUREMENT ANALYSIS

4.a – Plume Phase Field Measurements and Analysis:

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; I.7, 8, 9)

EXTENT OF PLAY:

Citrus: N/A
Levy: N/A

- **DOH/BRC:** Will use instrumentation and measurement techniques as stated in the SOP's

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; 1.8, 11; J.10.a)

EXTENT OF PLAY:

Citrus: N/A

Levy: N/A

DOH/BRC: Will use instrumentation and measurement techniques as stated in the SOP's

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)

EXTENT OF PLAY:

Citrus: N/A

Levy: N/A

DOH/ BRC: Will use instrumentation and measurement techniques as stated in the SOP's

4.b -- Post Plume Phase Field Measurements and Sampling:

Criterion 4.b.1: The field teams demonstrate the capability to make appropriate measurements and to collect appropriate samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessments and protective action decision-making. **(NUREG-0654, I.8; J.11)**

EXTENT OF PLAY:

Citrus: N/A

Levy: N/A

DOH/BRC: Will use instrumentation and measurement techniques as stated in the SOP's

4.c -- Laboratory Operations:

Criterion 4.c.1: The laboratory is capable of performing required radiological analysis to support protective action decisions. (NUREG-0654, C.3; J.11)

EXTENT OF PLAY:

Citrus: N/A

Levy: N/A

DOH/BRC: Will use instrumentation and measurement techniques as stated in the SOP's. To facilitate the exercise, pre-prepared samples may be provided to be analyzed before the field team samples are available.

5. EMERGENCY NOTIFICATION AND PUBLIC INFORMATION

5.a -- Activation of the Prompt Alert and Notification System:

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 and NUREG-0654, E.5, 6, 7)

EXTENT OF PLAY:

Citrus: Once the final decision to implement protective actions is made, Citrus County will (simulate) sounding sirens and issue the appropriate EAS messages in a timely manner following the initial decision to notify the public.

Levy: In Agreement

State and FSERT: In Agreement

Criterion 5.a.2 was removed for this exercise

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.6, Appendix 3.B.2.c)

EXTENT OF PLAY:

Citrus: If there is a siren site down, after Citrus County simulates siren sounding, this objective will be demonstrated (backup route alerting around that site) by discussion at the EOC.

Levy: Backup route alerting will be demonstrated by discussion at the EQC. Will be scenario driven.

FSERT: N/A

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)

EXTENT OF PLAY:

Citrus: In agreement

Levy: In Agreement

State: In Agreement

6. SUPPORT OPERATION/FACILITIES

6.a – Monitoring and Decontamination of Evacuees and Emergency Workers and Registration of Evacuees:

Criterion 6.a.1: The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees and/or emergency workers. (NUREG-0654, J.10.h; 5.12; K.5.a)

EXTENT OF PLAY:

Citrus: In Agreement. This criterion will be demonstrated out of sequence on May 14 at 7:00 PM at the Withlatchoochee Vo-Tech Center.

Levy: Will demonstrate this at Bronson High school on May 15 at 6:30 PM.

6.b – Monitoring and Decontamination of Emergency Worker Equipment:

Criterion 6.b.1: The facility/ORO has adequate procedures and resources for the accomplishment of monitoring and decontamination of emergency worker equipment, including vehicles. (NUREG-0654, K.5.b)

EXTENT OF PLAY:

Citrus: Will demonstrate this during the emergency wash down drill on May 13, 2002 at 7 PM. This will be done out of sequence at the Crystal River National Guard Armory.

Levy: Will demonstrate this during the emergency wash down at Lebanon Station on May 16 at 6:00 PM. This will be done out of sequence.

Citrus and Levy Counties will have at least two cars at the wash down (one contaminated and one clean). There will also be a clean and a contaminated individual.

6.c – Temporary Care of Evacuees:

Criterion 6.c.1: Managers of congregate care facilities demonstrate that the centers have resources to provide services and accommodations consistent with American Red Cross planning guidelines (found in Mass Care Preparedness Operations, ARC 3031). Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate prior to entering congregate care facilities. (NUREG-0654, J.10.h, J.12)

EXTENT OF PLAY:

Citrus: In Agreement. This will be done out of sequence by a walk through at the Withlatchoochee Vo-Tech Center on May 14 at 7 PM.

Levy: Will demonstrate this out of sequence by a walk through at 6:30 PM on May 15 at Bronson High School.

6.d – Transportation and Treatment of Contaminated Injured Individuals:

Criterion 6.d.1: The facility/ORO **has** the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals. (NUREG-0654, F.2; f1.10; K.5.a, b; L.1, 4)

EXTENT OF PLAY

Citrus: N/A

Levy: N/A

APPENDIX 4.

EXERCISE SCENARIO

This appendix contains the exercise scenario submitted by the State of Florida and approved by FEMA Region IV.

SCENARIO DESCRIPTION

NOTE: Participant interaction with the Simulator may slightly alter the timing of certain operational events. The times listed are an approximation and will be used should the Simulator fail.

0700 **INITIAL CONDITIONS:** Initial conditions and ground rules are presented to the operating crew in the Simulator Control Room and participants in the shops.

0730 **LOSS OF ANNUNCIATORS:** VBDP-5 Breaker 28 fails due to a blown fuse causing a loss of Control Room Annunciator panels A through I, and the annunciator printer.

0745 **ALERT:** An Alert is declared based on an unplanned loss of annunciators and the earlier loss of the plant computer and SPDS. Technical Support Center and Operational Support Center staffing is initiated and in-shop accountability begins.

0815 **TSC OPERATIONAL.** The TSC will probably be operational by this time (required 60 minutes from the Alert declaration).

ALARM/PICS RESTORED: The Computer specialist has successfully rebooted the plant computer and electricians have replaced breaker 28 on VBDP-5 restoring annunciators.

0820 **SPDS and PPC RESTORED:** The Computer specialist reports that the plant computer has been rebooted and is now functional. [Simulator Controller notify of repair]

0825 **EARTHQUAKE:** A series of strong floor and ground movements are felt by personnel on the plant site. The Seismic System Trouble alarm is received. The Control Room receives calls confirming event.

- The quake causes minor changes in core geometry. Stresses on the fuel assemblies cause a spike in RCS activity as monitored by RM-L1.
- MFP-1A trips, but RPS fails to reduce reactor level because multiple control rods have become jammed and will not insert in the core. Reactor pressure exceeds the RPS trip setpoint.
- Depressing the Reactor Trip Pushbutton and opening required power supply breakers also fail to insert sufficient rods to take the reactor subcritical. Reactor Power lowers to approximately 20% and begins a slow decrease as xenon builds in and boron is added by MUP-1B drawing suction from the BWST.
- Operators attempt to begin emergency operation via CAV-60 but CAP-1A trips on thermal overload.
- Operators initiate manual HPI. MUP-1C fails to start (breaker malfunction).
- Units 4 and 5 trip.
- RM-L1 increases.

- 0826 **INJURY:** A worker fell while descending the stairs from the Maintenance offices when the earthquake occurred, fracturing a leg.
- 0828 **FIRE:** A drum of morpholine staged at the Turbine Bldg I 19' elevation at the equipment hatch has turned over and liquid is spilling on the 119' and into the hatch to the 95'.
- 0835 **SC LEAK REPORT:** The SPO reports that the A SC Heat Exchangers is leaking.
- 0840 **SITE AREA EMERGENCY:** A Site Area Emergency is declared based failure of RPS to trip the reactor after an RPS setpoint was exceeded and efforts to manually trip the reactor from the Control Room were not successful. The site evacuation alarm is sounded initiating Protected Area evacuation and accountability (simulated). EOF staffing is initiated.
- 0855 **DISK RUPTURE:** Pressurizer level increases and RCS becomes solid, opening the PORV and eventually rupturing the RCDT disk releasing Reactor Coolant to the Containment Building.
- 0910 **ACCOUNTABILITY:** Protected Area accountability is complete. (simulated).
- 0915 **MUP-1C REPAIRED:** The ERT reports that MUP-1C breaker has been repaired.
- 0913 **SUBCRITICAL:** Boration and Xenon buildup have taken the reactor subcritical. The operating crew continues in EOP-2. A plant cooldown is started.
- 0940 **EOF OPERATIONAL:** The EOF is required to be operational by this time (or 60 minutes from the Site Area Emergency).
- 1000 **PIPELINE RUPTURE OFFSITE:** Levy EOC is notified of a natural gas line rupture as result of earthquake. Pipeline crosses U.S. Highway 19 about 0.5 miles north of Inglis and north/southbound traffic will be impacted for at least six (6) hours.
- 1005 **AFTER-SHOCK:** A significant after-shock" occurs causing the following:
- several stuck control rods fail into the core.
 - additional mechanical stresses on the fuel and corresponding increase in RCS activity.
 - a 300 gpm LOCA occurs inside the RB.
 - a large tear develops in the Containment Purge Duct providing a release path to the Auxiliary Building.
- 1006 **RELEASE:** The RM-A2 gas warning alarm is received indicating a low-level release to the environment.

- 1020 **GENERAL EMERGENCY : A** General Emergency is declared based on the loss of all three fission product barriers. A protective action recommendation is made *to* evacuate **Zones 1** and shelter zones 2, and 3.
- 1021 **RM-A2 LOW-RANGE OFF-SCALE:** RM-A2 low-range monitor is off-scale. Dose Assessment personnel request operators to place the valve controller in **Auto** to put the mid-range monitor **in** service.
- 1030 **CAP-1A REPAIRED:** The ERT reports that **CAP-1A** overloads have been repaired.
- 1040 **SC HEAT EXCHANGER REPAIRED:** The ERT report **the** leak has been stopped on the "A" SC Heat Exchanger.
- 1400 **TERMINATION:** The Exercise is terminated.

DAY FOUR
(Three days after the accident)

0800 Initial briefing conducted at the EOF.

Recovery organizations are in place in the EOF. The release from the reactor building continued at low levels throughout the evening of the event and was terminated at approximately 11:00 p.m. DOE has completed initial aerial monitoring throughout the 50-mile EPZ and have established a "foot print" of radioactive deposition in areas of Citrus, Marion, Levy and Alachua counties. DOH field teams have been sampling throughout the last three days and have confirmed the location of deposited material. DOH field teams activities today will include: collecting/transporting samples; analyzing samples using the MERL and relaying results to the proper authorities. The State is discussing re-entry into selected areas of the EPZ as well as setting up interdiction points for foodstuffs leaving the affected areas.

CW-3 is in stable condition. Plans for containment entry are being discussed,

0820 The plant requests a new diesel air compressor and fuel tank.

0830 The EOF Director is provided an update on an injured person from Day One.

0900 The news media (mock) is requesting a tour of the site. The media is also inquiring on the status of the person injured.

0915 The plant requests additional radiation monitoring equipment. The plant requests utility contacts to provide monitoring equipment.

0930 Fossil Operations requests that essential personnel be allowed to return to Units 4/5. The Energy Control Center reports high electrical demand and are requesting the restart of Units 4/5.

0950 The media monitor at the EOF hears a report on channel 10 that says an FPC nuclear plant employee is missing and that the family is accusing FPC of covering up a fatality.

1000 Health Physics reports that the north coal pile has contamination levels slightly above acceptable limits. Fossil Operations has inquired as to the burning of coal from that pile. Also, a coal train is due to arrive on site in two (2) hours, Fossil Operations requests that the train be allowed access.

1015 The State of Florida requests an estimate of total activity released. FPC Dose Assessment personnel begin evaluation.

- 1100 Two FPC Coal Plant employees have arrived at Citrus Memorial Hospital Emergency Room complaining of radiation sickness. They said they evacuated the site three days ago with all the other non-essential personnel.
- 1120 The Citrus County Representative at the EOF requests additional KI and dosimeters from FPC for their emergency workers. DOH reports that they can not obtain any until tomorrow.
- 1200 THE EXERCISE IS TERMINATED.