



**FEMA**

**NOV 21 2007**

Mr. Jim Caldwell  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region III  
2443 Warrenville Road  
Lisle, Illinois 60542-4351

Dear Mr. Caldwell:

Enclosed is one copy of the Final Report for the August 14, 2007, Radiological Emergency Preparedness (REP) Partial Participation Plume Exposure Pathway Exercise for the D.C. Cook Nuclear Plant. The State of Michigan, Berrien County, and the utility owner/operator, American Electric Power, participated in this exercise. The Final Exercise Report was prepared by the Department of Homeland Security, FEMA Region V REP Program staff.

No Deficiencies were identified for any jurisdiction during this exercise.

There was one Area Requiring Corrective Action (ARCA) identified for the State of Michigan during this exercise.

The ARCA identified for the State of Michigan was under Criterion 2.b.2 - Protective Action Decision Making, whereby farmers are being ordered to evacuate and at the same time are being advised to place their animals on stored feed and protected water.

One prior ARCA for the State of Michigan identified during the September 20, 2005, D.C. Cook Nuclear Plant REP Exercise was resolved during this exercise.

There were two ARCAs identified for Berrien County. One ARCA was resolved during a re-demonstration and one ARCA remains unresolved.

The first ARCA identified for Berrien County was under Criterion 3.a.1 - Protective Action Implementation, whereby while conducting the Dosimetry and Safety briefing the Incident Commander did not brief personnel on exposure limits, stay times and turn-back values. This ARCA was successfully re-demonstrated.

The second ARCA identified for Berrien County was under Criterion 5.a.1 - Emergency Notification and Public Information, whereby the first instructional message failed to identify the local government organization and the official with the authority for providing the alert signal

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and instructional message. Instead, the Utility was listed as the agency with the authority for issuing the evacuation order. This ARCA is unresolved.

The final report contains the evaluation of the biennial exercise and a detailed discussion of these ARCAs. These issues can be found on Part IV of the final report.

Based on the results of the August 14, 2007, exercise, the offsite radiological emergency response plans and preparedness for the State of Michigan and affected local jurisdictions, site-specific to the D.C. Cook Nuclear Plant, can be implemented and are adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of a radiological emergency at the site. Therefore, the Title 44 CFR, Part 350, approval of the offsite radiological emergency response plans and preparedness for the State of Michigan site-specific to the D.C. Cook Nuclear Plant, granted on June 15, 1987, will remain in effect.

If you should have any questions, please contact William King, Regional Assistance Committee Chair, FEMA Region V, at (312) 408-5575.

Sincerely,



Vanessa E. Quinn  
Acting Director  
Technological Hazards Division  
National Preparedness Directorate

Enclosure

Cc: Mr. Anthony McMurtray, Chief  
Inspection and Communication Section  
U.S. Nuclear Regulatory Commission  
Mail Stop: O-6H2  
Washington, DC 20555-0001

# D.C. Cook Nuclear Plant

Exercise Report - 2007-08-14

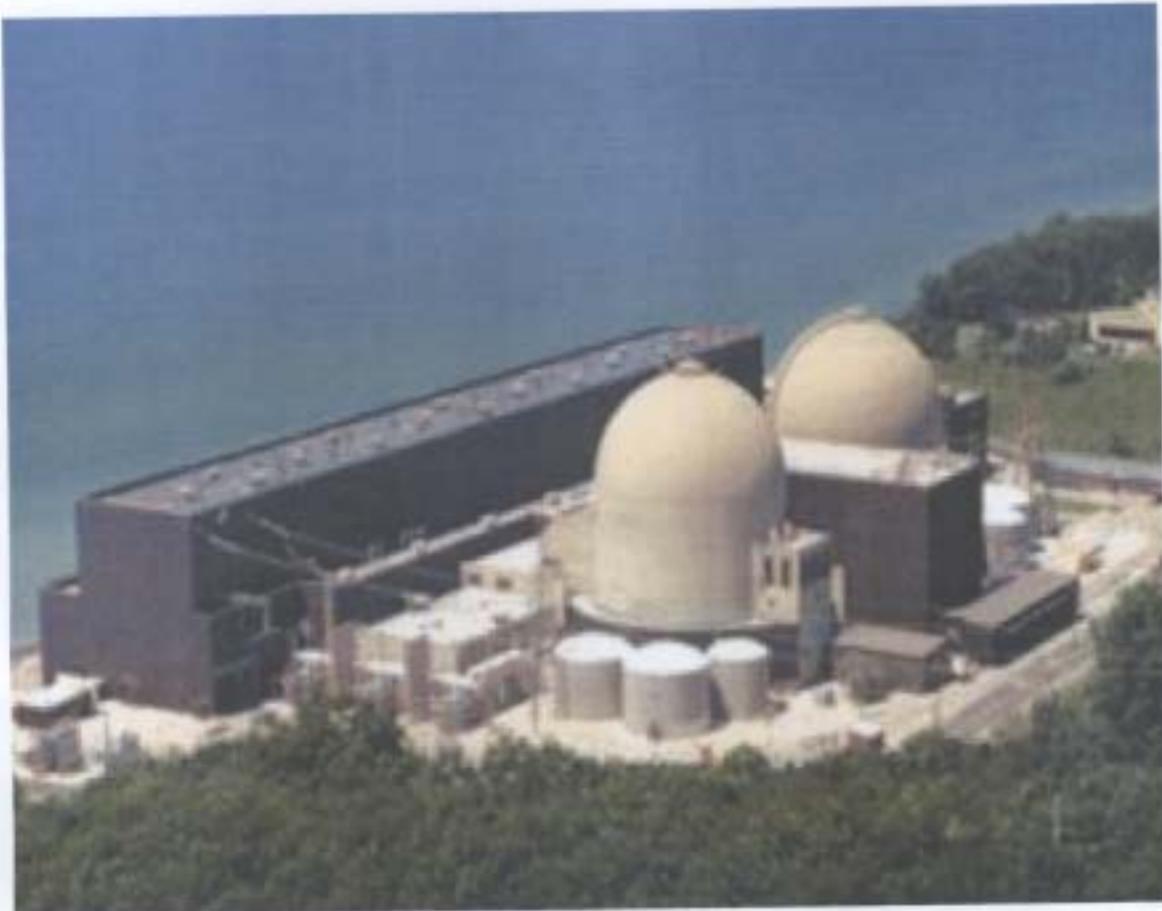
Final Report - Radiological Emergency

Preparedness (REP) Program

2007-11-05



# FEMA





# FEMA

Exercise Report

D.C. Cook Nuclear Plant

Exercise Date: 2007-08-14

Report Date: 2007-11-05

U.S. DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

REP Program

536 S. Clark St. 6th floor

Chicago, IL 60605

#### 4.2.2.5. Emergency Alert System Radio Station

##### WSJM

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

#### 4.2.2.6. Evacuee Monitoring and Decontamination - Brandywine High School

- a. MET: 1.d.1, 1.e.1, 3.a.1, 6.a.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.2.7. Evacuee Registration - Brandywine High School

- a. MET: 1.d.1, 1.e.1, 3.a.1, 6.a.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.2.8. Congregate Care Center - Brandywine High School

- a. MET: 1.d.1, 6.c.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None

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

#### 4.2.2.9. Evacuee Vehicle Monitoring and Decontamination - Brandywine High School

- a. MET: 1.d.1, 1.e.1, 3.a.1, 6.a.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.2.10. Emergency Worker Monitoring - New Buffalo Sewage Treatment Plant

- a. MET: 1.d.1, 1.e.1, 3.a.1, 6.a.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.2.11. Emergency Worker Decontamination - New Buffalo Sewage Treatment Plant

- a. MET: 1.d.1, 1.e.1, 3.a.1, 6.a.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: 3.a.1.

ISSUE NO.: 15-07-3a1-A-03

ISSUE: OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers IAW plans and procedures. Emergency workers periodically and at the end of each mission read and record dosimeter reading. (NUREG-0654, K.3)

CONDITION: While conducting the Dosimetry and Safety briefing the IC did not brief personnel on exposure limits, stay times and turn-back values.

POSSIBLE CAUSE: The IC was not familiar with the requirements to brief EWs on turn-back values, stay times and exposure limits.

REFERENCE: NUREGS 0654 K.3.a, 3.b

EFFECT: Emergency Workers could have exceeded their maximum exposure levels, turn-back limits or stay times.

CORRECTIVE ACTION DEMONSTRATED: This issue was corrected on Thursday, August 16, 2007, when the IC conducted retraining for EW team leaders regarding the importance of informing their personnel of maximum exposure levels, turn-back limits and stay times. After the retraining was conducted a successful redemonstration of the Dosimetry and Safety Briefing was performed.

- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.2.12. Emergency Worker Equipment/Vehicle Monitoring and Decontamination - New Buffalo Sewage Treatment Plant

- a. MET: 1.d.1, 1.e.1, 3.a.1, 6.b.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### **4.2.2.13. MS-1 Drill - Medical Facility - Lakeland Regional Medical Center**

- a. MET: 1.d.1, 1.e.1, 3.a.1, 6.d.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### **4.2.2.14. MS-1 Drill - Transportation - Medic 1 Ambulance**

- a. MET: 1.d.1, 1.e.1, 3.a.1, 3.b.1, 6.d.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### **4.2.2.15. EV-2 Interview - Lakeshore Public Schools**

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

#### **4.2.2.16. EV-2 Interview - Bridgman Public Schools**

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

# APPENDIX 1

## ACRONYMS AND ABBREVIATIONS

AA	Agricultural Advisories
ADRCS	Adventist Disaster Response Community Services
ARC	American Red Cross
ARES	Amateur Radio Emergency Service
BC	Berrien County
BCEM	Berrien County Emergency Management
BCEMC	Berrien County Emergency Management Coordinator
BCEWS	Berrien County Early Warning System
BCHD	Berrien County Health Department
BCISD	Berrien County Intermediate School District
BCPSCDC	Berrien County Public Safety Communications Dispatch Center
BCSO	Berrien County Sheriff's Office
BEOC	Berrien County Emergency Operations Center
BOB	Buchanan Office Building
CB	Citizen Band
CCC	Congregate Care Center
CD V	Civil Defense, Category V
CME	Chief Medical Executive
DCNPP	DC Cook Nuclear Power Plant
DCO	Dosimetry Control Officer
DDE	Deep Dose Equivalent
DO	Duty Officer
DRD	Direct-Reading Dosimeter
DW	Decontamination Worker
EAS	Emergency Alert System
ECL	Emergency Classification Level
ED	Emergency Department
EMC	Emergency Management Coordinator
EMD	Emergency Management Director
EMHSD	Emergency Management and Homeland Security Division (MSP)
EMS	Emergency Medical Services
ENC	Emergency News Center
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
EW	Emergency Worker
EWDC	Emergency Worker Decontamination Center
EWMC	Emergency Worker Monitoring Center
FD	Fire Department
FMT	Field Monitoring Team
FTC	Field Team Center

FTCC	Field Team Center Coordinator
GE	General Emergency
GM	Geiger Mueller
HEMS	Health Emergency Medical System
HERN	Hospital Emergency Radio Network
HP	Health Physicist
HPL	Health Physics Liaisons
HPRT	Health Physics Response Team
HPT	Health Physics Technician
IC	Incident Commander
INP	Initial Notification Point
ISD	Intermediate School District
IWP	Initial Warning Point
JIC	Joint Information Center
JPIT	Joint Public Information Team
LD	Luminescent Dosimeter
LEIN	Law Enforcement Information Network
LRMC	Lakeland Regional Medical Center
MARS	Military Amateur Radio Service
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MEPSS	Michigan Emergency Public Safety System
MPSCS	Michigan Public Safety Communications System
MSP	Michigan State Police
NBTFD	New Buffalo Township Fire Department
ND	News Director
NPEN	Nuclear Plant Event Notification
NPP	Nuclear Power Plant
NRC	Nuclear Regulatory Commission
NWS	National Weather Service
OG	Operations Group
OGC	Operations Group Chief
OSL	Optically Stimulated Luminescence
PA	Public Address
PAD	Protective Action Decision
PAG	Protective Action Guidelines
PAO	Protective Action Order
PAR	Protective Action Recommendation
PIO	<i>Public Information Officer</i>
PPE	Personal Protective Equipment
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Services
REA	Radiation Emergency Area
REP	Radiological Emergency Preparedness
RESA	Regional Educational Service Agency
RPC	<i>Radiological Protection Chief</i>
RPO	Radiological Protection Officer
SAE	Site Area Emergency
SED	State Emergency Director

SEOC	State Emergency Operations Center
SHP	State Health Physicist
SMCAS	Southwestern Michigan Community Ambulance Service
SOP	Standard Operating Procedure
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescence Dosimeter
TSG	Technical Support Group
UE	Unusual Event
UENC	Utility Emergency News Center

## APPENDIX 2

# EXERCISE EVALUATORS AND TEAM LEADERS

DATE: 2007-08-14, SITE: D.C. Cook Nuclear Plant, MI

LOCATION	EVALUATOR	AGENCY
Initial Notification Point	Delwyn Kinsley	DHS/FEMA
State Emergency Operations Center	Carl Bebrich Delwyn Kinsley *Carolyn Sturghill	DHS/FEMA DHS/FEMA DHS/FEMA
Technical Support Group	Thomas Essig	ICF
Field Team Center Cell	Richard Smith	ICF
Joint Information Center	George R MacDonald	ICF
Joint Information Center Hotline	George R MacDonald	ICF
State Liaison - Berrien County Emergency Operations Center	Richard Grundstrom	ICF
State DEQ Rep - Brandywine High School	Robert Duggleby	ICF
State DEQ Rep - New Buffalo Sewage Treatment Plant	Thomas Essig *Carolyn Sturghill	ICF DHS/FEMA
State DEQ Rep - MS-1 Drills - Transportation	Carl Bebrich	DHS/FEMA
State DEQ Rep - MS-1 Drills - Medical Facility	Clinton Crackel	DHS/FEMA
Berrien County Initial Notification Point	Pat Tenorio	DHS/FEMA
Berrien County Emergency Operations Center	Sandra Bailey *Clinton Crackel Richard Grundstrom	DHS/FEMA DHS/FEMA ICF
Berrien County Traffic and Access Control Point	Robert Duggleby	ICF
County Personnel in JIC	George R MacDonald	ICF
Emergency Alert System Radio Station WSJM	Pat Tenorio	DHS/FEMA
Evacuee Monitoring and Decontamination - Brandywine High School	Pat Tenorio	DHS/FEMA
Evacuee Registration - Brandywine High School	Sandra Bailey	DHS/FEMA
Congregate Care Center - Brandywine High School	Richard Grundstrom	ICF
Evacuee Vehicle Monitoring and Decontamination - Brandywine High School	George R MacDonald	ICF
Emergency Worker Monitoring - New Buffalo Sewage Treatment Plant	David Petta	ICF
Emergency Worker Decontamination - New Buffalo Sewage Treatment Plant	Delwyn Kinsley	DHS/FEMA
Emergency Worker Equipment/Vehicle Monitoring and Decontamination - New Buffalo Sewage Treatment Plant	Richard Smith	ICF
MS-1 Drill - Medical Facility - Lakeland Regional Medical Center	*Clinton Crackel	DHS/FEMA
MS-1 Drill - Transportation - Medic 1 Ambulance	Carl Bebrich	DHS/FEMA
EV-2 Interview - Lakeshore Public Schools	*Clinton Crackel	DHS/FEMA
EV-2 Interview - Bridgman Public Schools	*Clinton Crackel	DHS/FEMA
* Team Leader		

## APPENDIX 3

### EXERCISE CRITERIA AND EXTENT-OF-PLAY AGREEMENT

This appendix lists the exercise criteria, which were scheduled for demonstration in the D. C. Cook Nuclear Plant Partial Participation Plume Exposure Pathway Exercise on August 14, 2007, and the off-site extent-of-play agreement approved by DHS/FEMA Region V on August 2, 2007.

The exercise criteria, contained in FEMA "Radiological Emergency Preparedness Exercise Evaluation Methodology" as published in the Federal Register Notice/Vol.67, No 80, dated April 25, 2002, represent a functional translation of the planning standards and evaluation criteria of NUREG-0654/FEMA-REP-1, Rev. 1, Criteria for the Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, November 1980.

Because the exercise criteria are intended for use at all nuclear power plant sites, and because of variations among off-site plans and procedures, an extent-of-play agreement is prepared by the State and approved by FEMA to provide evaluators with guidance on expected actual demonstration of the criteria.

#### **EVALUATION AREA 1 - EMERGENCY OPERATIONS MANAGEMENT**

**Criterion 1.a.1:** OROs use effective procedures to alert, notify and mobilize emergency personnel and activate facilities in a timely manner.

##### **State of Michigan**

The State Emergency Operations Center (SEOC) will be fully activated. State personnel reporting to the SEOC will be mobilized in accordance with procedures.

State personnel reporting to the County EOCs will be pre-positioned and will report when mobilized by the SEOC.

State personnel reporting to the JIC will be pre-positioned and will begin participation after the arrival of County JIC personnel.

State personnel involved in out of sequence demonstrations will be pre-staged.

A roster will be provided to demonstrate 24-hour staffing.

**Note: The use and interaction with E-team will not be evaluated.**

##### **Berrien County**

The Berrien County EOC will be activated and mobilized in accordance with procedures.

Berrien County JIC personnel will be mobilized in accordance with procedures.

A roster will be provided to demonstrate 24-hour staffing of the EOC.

**Note: The use and interaction with E-team will not be evaluated.**

**Criterion 1.b.1:** Facilities are sufficient to support the emergency response.

**State of Michigan**

This objective was demonstrated during the Palisades exercise on June 4, 2002.

The State Emergency Operations Center (SEOC) is maintained in operational readiness and set up will not be demonstrated.

**Berrien County**

This objective was demonstrated during the Palisades exercise on June 4, 2002.

Berrien County EOC will be set up prior to the start of the exercise.

**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.

**State of Michigan and Berrien County**

This criterion will be demonstrated at the SEOC, County EOC and JIC, and in all out of sequence demonstrations.

**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.

**State of Michigan and Berrien County**

This criterion will be demonstrated by the SEOC, County EOC, the JIC, and Access Control. If both the primary and back-up systems fail, this objective may be demonstrated by successful use of an alternate method of communication.

**Criterion 1.e.1:** Equipment, maps, displays, dosimetry, potassium iodide (KI) and other supplies are sufficient to support emergency operations.

**State of Michigan and Berrien County**

Equipment, maps, displays, and other supplies will be demonstrated to support emergency operations at the SEOC, JIC, and County EOC, in addition to out of sequence events.

Personnel involved in traffic and access control points will demonstrate knowledge of where to secure traffic control equipment.

Potassium iodide and dosimetry are stored at each county's emergency management office the remaining at the Community Health office and at the MSP/EMHSD office in Lansing.

The Michigan Department of Environmental Quality maintains supplies of potassium iodide and dosimetry for use by its personnel.

Documentation related to KI shelf life extension is maintained by MSP/EMHSD and will be provided in the Evaluators Handbook.

## **EVALUATION AREA 2 - PROTECTIVE ACTION DECISION MAKING**

**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.

### **State of Michigan**

The ability to make the decision to recommend the use of KI to emergency workers will be demonstrated by the SEOC.

Authorization to exceed state exposure limits will be demonstrated. If the scenario does not provide an opportunity to demonstrate these items, a controller inject will be issued to demonstrate the ability to perform these actions.

**Note: The Chair of the Radiological Preparedness Coordinating Committee on a case-by-case basis may approve of the re-demonstrated of this criterion.**

### **Berrien County**

**This criterion does not apply to the counties.**

**Criterion 2.b.1:** Appropriate protective action recommendations are based on available information on plant conditions, field monitoring data and licensee and ORO dose projections, as well as knowledge of on-site and off-site environmental conditions.

### **State of Michigan**

The Technical Support Group in the SEOC will evaluate licensee and FTC Cell provided information and complete an independent analysis of scenario data.

Dose assessment evaluation will be conducted via interview with the individual performing the FTC Cell role at the MSP/EMHSD office in Lansing.

**Note: The Chair of the Radiological Preparedness Coordinating Committee on a case-by-case basis may approve of the re-demonstrated of this criterion.**

**Berrien County**

**This criterion does not apply to the county.**

**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).

**State of Michigan**

The SEOC Executive Group in conjunction with applicable support staff will demonstrate this criterion, i.e. FTC cell, Tech support group.

**Note: The Chair of the Radiological Preparedness Coordinating Committee on a case-by-case basis may approve of the re-demonstrated of this criterion.**

**Berrien County**

**This criterion does not apply to the county.**

**Criterion 2.c.1:** Protective action decisions are made, as appropriate, for special population groups.

**State of Michigan**

This criterion will be demonstrated by the SEOC Executive Group in conjunction with applicable support staff, through the decision to recommend the use of KI to institutionalized persons.

**Berrien County**

Lists of transportation dependent and special needs populations are kept by the county. No personnel will be moved. No phone calls to transportation dependent persons will be made. Simulation of calls will be logged as such.

Equipment lists and rosters will be available in the county EOCs.

The School Services Representatives in the Berrien County EOCs will make phone contact with affected school districts if schools are in session. No scenario information will be discussed during these calls.

**Criterion 2.d.1:** Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO's planning criteria.

**This criterion will not be demonstrated during this exercise.**

**Criterion 2.e.1:** Timely re-location, re-entry and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the OROs plan and/or procedures.

**This criterion will not be demonstrated during this exercise.**

### **EVALUATION AREA 3 - PROTECTIVE ACTION IMPLEMENTATION**

**Criterion 3.a.1:** The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plan 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.

#### **State of Michigan**

**This criterion will not be demonstrated by the State.**

#### **Berrien County**

Berrien County will demonstrate this criterion out of sequence at the reception center and decontamination centers.

Berrien County will demonstrate this criterion at the access control point when emergency workers are issued dosimeters for use.

**Note: The evaluator at his/her discretion may approve immediately for credit of the re-demonstrated of this criterion.**

**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.

#### **State of Michigan**

The State will demonstrate this objective through decision-making and directives to implement appropriate Protective Action Orders.

### **Berrien County**

This criterion will be demonstrated during the traffic and access control demonstrations for Berrien County. Response personnel will demonstrate knowledge of when it is appropriate to take KI, but not actually ingest it.

KI will be distributed to emergency workers in Berrien County along with their dosimeters.

**Criterion 3.c.1:** Protective action decisions are implemented for special population groups within areas subject to protective actions.

### **State of Michigan**

**This criterion will not be demonstrated by the State.**

### **Berrien County**

This criterion will be demonstrated in the county EOCs via EOC staff discussions that may include evacuation of hospitals, nursing homes, correctional facilities, mobility impaired individuals, and transportation dependent. These discussions will be documented in situation logs.

Actual contacts to special population groups will not be made. Simulation of calls will be logged as such.

Berrien County will contact a minimum of four providers of transportation services, which may include public transit authorities, school systems for buses, ambulance services, or fire/rescue services. An endeavor will be made to contact a third of the total number of transportation providers. There will be no discussion of scenario information during these calls.

**Criterion 3.c.2:** OROs/School officials decide upon and implement protective actions for schools.

### **State of Michigan**

**This criterion will not be demonstrated by the State.**

### **Berrien County**

This criterion will be demonstrated Berrien County EOCs as driven by the scenario. If schools are not in session, the DHS evaluator will conduct an interview with the schools representative in the county EOCs.

An EV-2 interview will be conducted in Berrien County. Refer to the Table of Exercise Demonstrations for specific times and locations.

**Criterion 3.d.1:** Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel.

**State of Michigan**

This criterion will be demonstrated by the SEOC through the opening or closing of air space, and rail and waterways.

**Berrien County**

Decisions related to traffic and access control will be demonstrated in Berrien County EOCs. Berrien County, demonstration locations will be determined during the exercise at a time agreed upon by the DHS evaluator, the EMHSD Controller, and the county emergency management coordinator.

Staffing of all other access and traffic control points will be simulated.

**Note: The evaluator at his/her discretion may approve immediately, for credit, the re-demonstrated of this criterion.**

**Criterion 3.d.2:** Impediments to evacuation are identified and resolved.

**State of Michigan**

**This criterion will not be demonstrated by the State.**

**Berrien County**

This will be demonstrated through discussions at the county EOCs. Messages will be injected by EMHSD Controllers to drive these demonstrations. Personnel will deal with the impediments by discussing the need for equipment, discussing its estimated time of arrival, etc. If the impediment posed involves road closures that would have been known to exercise participants during the course of normal operations, this information will be provided to the players as part of the initial conditions for the exercise. All contacts, actual or simulated will be logged.

**Note: The evaluator at his/her discretion may approve immediately for credit of the re-demonstrated of this criterion.**

**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.

**This criterion will not be demonstrated during this exercise.**

**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.

**This criterion will not be demonstrated during this exercise.**

**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.

**This criterion will not be demonstrated during this exercise.**

#### **EVALUATION AREA 4 - 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.

**This criterion will not be demonstrated during this exercise.**

**Criterion 4.a.2:** Field teams are managed to obtain sufficient information to help characterize the release and to control radiation exposure.

**This criterion will not be demonstrated during this exercise.**

**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.

**This criterion will not be demonstrated during this exercise.**

**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.

**This criterion will not be demonstrated during this exercise.**

**Criterion 4.c.1:** The laboratory is capable of performing required radiological analyses to support protective action decisions.

**This criterion will not be demonstrated during this exercise.**

#### **EVALUATION AREA 5 - EMERGENCY NOTIFICATION AND PUBLIC INFORMATION**

**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.

**State of Michigan**

The State will provide information to each county for release in the Emergency Alert System messages.

**Berrien County**

The Berrien County Sheriff Department is the primary activation point for the public warning sirens. Berrien County also activates the Emergency Alert System. An interview with WSJM personnel will be conducted by DHS following transmittal of EAS messages.

**Note: The Chair of the Radiological Preparedness Coordinating Committee on a case-by-case basis may approve of the re-demonstrated of this criterion.**

**Criterion 5.a.2:** [RESERVED]

**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.

**The D.C. Cook EPZ does not contain any DHS approved exception areas. This criterion will not be demonstrated during this exercise.**

**Criterion 5.b.1:** OROs provide accurate emergency information and instructions to the public and the news media in a timely manner.

**State of Michigan and Berrien County**

This will be demonstrated at the JIC via dissemination of emergency information and instructions through joint media briefings and news release announcements in coordination with the SEOC and county EOCs. All media briefings will be conducted at the JIC.

AEP Indiana Michigan will operate a public inquiry hotline during the exercise by personnel based at the Service Center in Buchanan. Trending is performed by the Public Inquiry Coordinator, who identifies trends and ensures appropriate information is provided to the public inquiry operators and the JIC for inclusion in media briefings.

**Note: The Chair of the Radiological Preparedness Coordinating Committee on a case-by-case basis may approve of the re-demonstrated of this criterion.**

## **EVALUATION AREA 6 - SUPPORT OPERATION/FACILITIES**

**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.*

### **State of Michigan**

State DEQ HP personnel will provide assistance as requested during these demonstrations.

### **Berrien County**

Berrien County will fully demonstrate separate emergency worker and public reception/decontamination centers out-of sequence from the exercise.

Public reception centers will demonstrate 1/3 of the monitoring teams required to monitor 20% of the population allocated to that facility within a 12-hour period. Each team will monitor six individuals.

**Note: The evaluator at his/her discretion may approve immediately, for credit, the re-demonstrated of this criterion.**

**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.*

### **State of Michigan**

State DEQ HP personnel will provide assistance as requested during these demonstrations.

### **Berrien County**

Berrien County will each fully demonstrate an emergency worker/equipment decontamination center out of sequence with the exercise.

Emergency vehicles will be monitored and decontaminated as appropriate.

**Note: The evaluator at his/her discretion may approve immediately, for credit, the re-demonstrated of this criterion.**

**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. 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.

**Berrien County**

Berrien County will each fully demonstrate a congregate care center out of sequence with the exercise. This facility will be set up in advance of the demonstration. Personnel operating the center will not go through alert, mobilization, activation, or shift changes.

**Note: The evaluator at his/her discretion may approve immediately, for credit, the re-demonstrated of this criterion.**

**Note: Brandywine Elementary school is currently under construction, therefore the congregate care center will be demonstrated at the Brandywine High School**

**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.

**This criterion will be demonstrated during the MS-1 exercise on May 23, 2007.**

**Note: The evaluator at his/her discretion may approve immediately, for credit, the re-demonstrated of this criterion.**

**Note: The Lakeland Hospital in St. Joseph is currently under construction, and probably will be for the next few years. Because of this, there may be areas of the hospital that would normally be used for demonstration purposes that are under construction. Therefore, some demonstrations may need to be simulated in another area of the hospital that will not represent exactly what the area would look like under normal conditions. Please consider these issues at the time of the graded exercise.**

## APPENDIX 4

### EXERCISE SCENARIO

This appendix contains a summary of the simulated sequences of event that were used as the basis for invoking emergency response actions by OROs in the D.C. Cook Nuclear Plant exercise on August 14, 2007.

The Partial Participation Plume Exposure Pathway Exercise scenario was submitted by the State of Michigan and American Electric Power/Indiana Michigan Power Company, and approved by DHS/FEMA Region V on August 2, 2007.

During the exercise, controllers from the State of Michigan either gave or telephoned "inject messages", containing scenario events and/or relevant data, to those persons or locations who would normally receive notification of such events. These inject messages were the method used for invoking response actions by OROs.

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Time	Events	SEOC Actions	BEOC Actions	JIC Actions	FTC Actions
0732	Airlock Alarm.				
0737	Insert RCS Leak.				
0745	UE @ 12 gpm RCS leakage.				
0750	Manual Reactor trip. <b>Alert</b> declared.	<ul style="list-style-type: none"> <li>● MSP Operations notified by plant.</li> <li>● MSP Operations notifies MSP/EMHSD and MDEQ/DWRPS.</li> </ul>	<ul style="list-style-type: none"> <li>● Sheriff's Dispatch notified by plant and MSP LEIN.</li> <li>● Sheriff's Dispatch notifies Berrien county.</li> <li>● Dispatch notifies EM &amp; Chairperson.</li> <li>● EOC activation begun.</li> </ul>		
0806		<ul style="list-style-type: none"> <li>● SEOC activation begun.</li> <li>● MSP Operations notifies Berrien County.</li> <li>● Activation of JIC and FTC Cell begun.</li> <li>● SEOC notifies FEMA and Ontario.</li> </ul>		<ul style="list-style-type: none"> <li>● JIC activation begun; Utility personnel will not demonstrate A/N or facility setup.</li> <li>● State and Berrien County JIC personnel pre-positioned.</li> </ul>	FTC Cell activated for exercise.

Time	Events	SEOC Actions	BEOC Actions	JIC Actions	FTC Actions
0830	<ul style="list-style-type: none"> <li>● Hotline established to SEOC.</li> <li>● TSC &amp; OSC operational.</li> </ul>	<ul style="list-style-type: none"> <li>● SEOC operational.</li> <li>● Governor may declare State of Emergency/ Disaster.</li> <li>● Hotlines opened to plant and county.</li> <li>● Plant instructed to terminate notifications to Berrien County.</li> <li>● Notifications to county via SEOC.</li> </ul>	<ul style="list-style-type: none"> <li>● EOC activation underway.</li> <li>● Hotline opened to SEOC.</li> </ul>	Communications initiated with SEOC.	
0840	EOF operational.		<ul style="list-style-type: none"> <li>● EOC operational.</li> <li>● Siren system and EAS station placed on standby.</li> <li>● R/D and CCCs opened.</li> </ul>	JIC operational.	FTC Cell operational.
0910	<b>Site Area Emergency</b> declared due to unisolable breach in containment to >10 R/hr.	<ul style="list-style-type: none"> <li>● Plant notifies SEOC within 15 minutes.</li> <li>● Notification to county via SEOC.</li> <li>● If not done previously, declare State of Emergency/Disaster.</li> </ul>	<ul style="list-style-type: none"> <li>● R/D and CCCs activated.</li> <li>● Special needs are notified.</li> </ul>	<ul style="list-style-type: none"> <li>● Informed of SAE and PAO by SEOC.</li> <li>● Informs media.</li> </ul>	

Time	Events	SEOC Actions	BEOC Actions	JIC Actions	FTC Actions
1032	<ul style="list-style-type: none"> <li>● <b>General Emergency</b> (GE) declared due to <b>1.2 L</b> Containment radiation levels rise to &gt;200 R/hr.</li> <li>● <b>2.3L</b> Containment radiation levels &gt;10 R/hr.</li> <li>● <b>3.2L</b> Containment integrity - unisolable.</li> <li>● Protective action recommendation (PAR) made to State Director.</li> </ul>	<ul style="list-style-type: none"> <li>● Evaluates PAR.</li> <li>● Decides on a Protective Action Order (PAO).</li> <li>● Issues PAO to county.</li> <li>● Requests federal assistance via FEMA.</li> <li>● Issues further PAOs as needed.</li> </ul>	<ul style="list-style-type: none"> <li>● Sounds sirens.</li> <li>● Issues EAS message.</li> <li>● Implements PAO.</li> <li>● R/D and CCCs opened.</li> </ul>	<ul style="list-style-type: none"> <li>● Informed of GE and PAO by SEOC.</li> <li>● Informs media.</li> </ul>	
1210	<ul style="list-style-type: none"> <li>● Plant issues second PAR to SEOC due to change in wind direction.</li> </ul>	<ul style="list-style-type: none"> <li>● Evaluates PAR.</li> <li>● Decides on a PAO.</li> <li>● Issues PAO to county.</li> <li>● Notifies JIC, FTC, Ontario and FEMA of GE and PAO.</li> </ul>	<ul style="list-style-type: none"> <li>● Sounds sirens.</li> <li>● Issues EAS message.</li> <li>● Implements PAO.</li> </ul>	<ul style="list-style-type: none"> <li>● Informed of PAO by SEOC.</li> <li>● Informs media.</li> </ul>	FTC Cell is getting readings.
1300	Plant terminates exercise play with State when all criteria are demonstrated.	Exercise play terminated when all criteria are demonstrated. May terminate independently.	Exercise play terminated when all criteria are demonstrated. May terminate independently.	Exercise play terminated when all criteria are demonstrated. May terminate independently.	Exercise play terminated when all criteria are demonstrated. May terminate independently.

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#### Appendices

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# 1. Executive Summary

On August 14, 2007, a Radiological Emergency Preparedness (REP) Partial Participation Plume Exposure Pathway Exercise was conducted in the 10-mile Emergency Planning Zone (EPZ) around the D.C. Cook Nuclear Plant by the U.S. Department of Homeland Security, Federal Emergency Management Agency (DHS/FEMA), Region V. The purpose of this exercise was to assess the level of State and local preparedness in responding to a radiological emergency. This exercise was held in accordance with DHS/FEMA's policies and guidance concerning the exercise of State and local Radiological Emergency Response Plans (RERPs) and procedures.

The most recent exercise at this site was conducted on September 20, 2005. Qualifying emergency preparedness exercises were conducted on July 16, 1985, and August 8-9, 1989.

FEMA wishes to acknowledge the efforts of the many individuals in the State of Michigan and Berrien County who participated in the exercise.

Protecting the public health and safety is the full-time job of some of the exercise participants and an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork on the part of all participants was evident during this exercise.

This Final Report contains the evaluation of the biennial exercise and the evaluation of the following out-of-sequence activities:

State of Michigan: Department of Environmental Quality: Evacuee Monitoring, Decontamination, and Registration; Evacuee Vehicle Monitoring and Decontamination; Emergency Worker Monitoring and Decontamination; Emergency Worker Equipment/Vehicle Monitoring and Decontamination; and Medical Services (MS-1) Drill.

Berrien County: Congregate Care Center; Evacuee Monitoring, Decontamination, and Registration; Evacuee Vehicle Monitoring and Decontamination; Emergency Worker Monitoring and Decontamination; Emergency Worker Equipment/Vehicle Monitoring and Decontamination; School Interviews (EV-2); and Medical Services (MS-1) Drill - Transportation and Medical Facility.

The State and local organizations except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. No Deficiencies were identified during this exercise.

There was one Area Requiring Corrective Action (ARCA) identified for the State of Michigan during this exercise.

The ARCA identified for the State of Michigan was under Criterion 2.b.2 - Protective Action Decision Making, whereby farmers are being ordered to evacuate and at the same time are being advised to place their animals on stored feed and protected water.

One prior ARCA for the State of Michigan identified during the September 20, 2005, D.C. Cook Nuclear Plant REP Exercise was resolved during this exercise.

There were two ARCAs identified for Berrien County. One ARCA was resolved during a re-demonstration and one ARCA remains unresolved.

The first ARCA identified for Berrien County was under Criterion 3.a.1 - Protective Action Implementation, whereby while conducting the Dosimetry and Safety briefing the IC did not brief personnel on exposure limits, stay times and turn-back values. This ARCA was successfully re-demonstrated.

The second ARCA identified for Berrien County was under Criterion 5.a.1 - Emergency Notification and Public Information, whereby the first instructional message failed to identify the local government organization and the official with the authority for providing the alert signal and instructional message. Instead, the Utility was listed as the agency with the authority for issuing the evacuation order. This ARCA is unresolved.

A detailed discussion of these issues can be found in Part IV of this report.

## 2. Introduction

In December 7, 1979; the President directed FEMA to assume the lead responsibility for all off-site 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 Rule 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 governments' participation in joint exercises with licensees.

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

- Taking the lead in off-site emergency planning and in the review and evaluation of RERPs 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 U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993 (Federal Register, Vol. 58, No. 176, dated September 14, 1993); and
- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:

U.S. Department of Agriculture;  
U.S. Department of Energy;  
U.S. Department of Health and Human Services;  
U.S. Department of the Interior;  
U.S. Department of Transportation;  
U.S. Environmental Protection Agency;  
U.S. Food and Drug Administration; and

U.S. Nuclear Regulatory Commission.

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

Formal submission of the RERPs for the D. C. Cook Nuclear Plant to FEMA Region V by the State of Michigan and involved local jurisdictions occurred on January 23, 1986. Formal approval of these RERPs was granted by FEMA to the State of Michigan on June 15, 1987, under 44 CFR 350.

A REP Partial Participation Plume Exposure Pathway Exercise was conducted in the 10-mile EPZ around the D.C. Cook Nuclear Plant on August 14, 2007, by DHS/FEMA Region V, 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 D.C. Cook Nuclear Plant. The purpose of this exercise report is to present the exercise results and findings on the performance of the off-site response organizations (ORO) during a simulated radiological emergency.

The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the DHS/FEMA Region V RAC Chairperson, and approved by the FEMA Headquarters' Acting Technical Hazards Division Director.

The criteria utilized in the DHS/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 "Radiological Emergency Preparedness: Exercise Evaluation Methodology" as published in the Federal Register Notice/Vol. 67, No. 80, dated April 25, 2002.

Section III of this report, entitled "Exercise Overview", presents basic information and data relevant to the exercise. This section of the report 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 of this report, entitled "Exercise Evaluation and Results," presents detailed information on the demonstration of applicable exercise criteria 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 the State and local governments' schedule of corrective actions for each identified exercise issue; and (2) descriptions of unresolved ARCAs assessed during previous exercises and the status of the OROs' efforts to resolve them.

## 3. Exercise Overview

Contained in this section are data and basic information relevant to the August 14, 2007, REP Partial Participation Plume Exposure Pathway Exercise to test the off-site *emergency response capabilities* in the area surrounding the D.C. Cook Nuclear Plant. This section of the exercise report includes a description of the 10-mile plume pathway EPZ, a listing of all participating jurisdictions and functional entities that were evaluated, and a tabular presentation of the time of the actual occurrence of key exercise events and activities.

### 3.1. EPZ Description

The D. C. Cook Nuclear Plant is located in the State of Michigan, Berrien County, in the City of Bridgman on the eastern shore of Lake Michigan.

The eastern half of the primary 10-mile EPZ lies entirely within Berrien County. The following jurisdictions are located within the EPZ: Baroda Township, Baroda Village, City of Benton Harbor, Benton Township, City of Bridgman, City of Buchanan, Buchanan Township, Chikaming Township, Lake Township, Lincoln Township, Stevensville, Cronoko Township, Village of Berrien Springs, Royalton Township, City of St. Joseph, St Joseph Township, Village of Shoreham, Sodus Township, and Weesaw Township. The western half of the EPZ extends into Lake Michigan in an approximate 10-mile radius.

Within the 10-mile EPZ, located on Lake Michigan, are summer resorts offering camping facilities, light housekeeping cottages, tourist attractions, and the Warren Dunes State Park, which has a capacity of 22,000 people. The area has a population that varies from season to season. The permanent population is estimated to be over 80,000 people. Seasonal fresh fruit and vegetable farming and processing takes place during the spring, summer, and fall months. A portion of the large seasonal work force is Spanish-speaking. Lake Michigan is the cooling water source for the plant. Transportation facilities include the CSX Railroad.

### 3.2. Exercise Participants

Agencies and organizations of the following jurisdictions participated in the D.C. Cook Nuclear Plant exercise:

State Jurisdictions

- Office of the Governor
- Michigan State Police
- Michigan State Police Emergency Management and Homeland Security Division
- Department of Environmental Quality
- Department of Agriculture
- Department of Human Services
- Department of Information Technology
- Department of Military and Veterans Affairs
- Department of Natural Resources
- Michigan Army National Guard
- Michigan Attorney General
- Michigan Supreme Court
- Department of Transportation
- Office of Services to the Aging

Risk Jurisdictions

- Berrien County Board of Commissioners
- Berrien County Sheriff's Department
- Sheriff's Department Office of Emergency Management
- Berrien County Intermediate School District
- Berrien County Road Commission
- Berrien County Health Department
- Berrien County Family Independence Agency
- Berrien County Animal Control
- Berrien County Equalization
- Saint Joseph Fire Department
- Saint Joseph Police Department
- New Buffalo Township Volunteer Fire Department
- Lakeshore Public Schools
- Bridgman Public Schools
- Brandywine Public Schools

Private Jurisdictions

- Berrien County Chapter of the American Red Cross
- Radio Amateur Civil Emergency Services
- Lakeland Regional Medical Center
- Medic 1 Ambulance
- American Electric Power/Indiana Michigan Power Company

### 3.3. Exercise Timeline

Table 1, on the following page, presents the times at which key events and activities occurred during the REP Partial Participation Plume Exposure Pathway Exercise that was conducted in the 10-mile EPZ around the D. C. Cook Nuclear Plant on August 14, 2007. Also included are times that notifications were made to the participating jurisdictions/*functional entities*.

**TABLE 1. Exercise Timeline**

DATE AND SITE: August 14, 2007 – D.C. Cook Nuclear Plant

Emergency Classification Level (ECL)	Time Utility Declared	Time That Notification Was Received or Action Was Taken			
		TECH SUPPORT GROUP	STATE OF MICHIGAN	BERRIEN COUNTY	JOINT INFORMATION CENTER
Unusual Event (UE)	0747	N/A	0809	0755	N/A
Alert	0802	N/A	0814	0810	0802
Site Area Emergency (SAE)	0921	0924	0925	0935	0925
General Emergency (GE)	1025	1040	1038	1042	1032
Simulated Release of Radioactive Material Started	0921	N/A	0925	0926	0921
Simulated Release of Radioactive Material Terminated	N/A	N/A	N/A	N/A	N/A
Facility Declared Operational		0917	0917	0935	0957
State of Disaster		N/A	1014	N/A	N/A
Local State of Emergency		N/A	N/A	0937	N/A
Exercise Terminated		1251	1255	1310	1317
1 <sup>st</sup> Precautionary Action Decision – Livestock Advisories for Areas 1, 2 and 4 – Shelter all dairy and livestock animals, and place on stored feed and protected water. Agriculture advisories placed on Feed Operators and Facilities, Food Establishments and Facilities, Fruit and Vegetable Growers and Distributors, and Farmers, Gardeners, & Produce-Stand Operators in Areas 1, 2 and 4.		N/A	0929	N/A	0946
1 <sup>st</sup> Protective Action Order: Evacuate: Areas 1 and 2, and Lake Michigan out to 5-miles.		1038	1040	1046	N/A
Siren Activation		N/A	N/A	1049	N/A
EAS Message		N/A	N/A	1055	N/A
2 <sup>nd</sup> Precautionary Action Decision - Agricultural Embargo Order for Areas 1, 2, 3 and 4.		N/A	1147	N/A	N/A
2 <sup>nd</sup> Protective Action Order: Evacuate: Areas 1, 2, 3 and 4, and Lake Michigan out to 10-miles		N/A	1155	N/A	N/A
Siren Activation		N/A	N/A	1203	N/A
EAS Message		N/A	N/A	1209	N/A
KI Administration Decision: Ingestion of KI by EWs in all Areas.		N/A	1052	N/A	N/A
KI Administration Decision: Ingestion of KI by institutionalized individuals and their caregivers, both under age 40 in Areas 1 and 2.		N/A	1052	N/A	N/A
KI Administration Decision: Ingestion of KI by institutionalized individuals and their caregivers, both under age 40 in Areas 3 and 4.		N/A	1145	N/A	N/A

## 4. 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 August 14, 2007, REP Partial Participation Plume Exposure Pathway exercise and out-of-sequence MS-1 Drill and EV-2 interviews to test the off-site emergency response capabilities of State and local governments in the 10-mile EPZ surrounding the D. C. Cook Nuclear Plant.

Each jurisdiction and functional entity was evaluated based on its demonstration of criteria delineated in exercise criteria contained in Federal Register Notice/Vol. 67, No. 80, dated April 25, 2002. Detailed information on the exercise criteria and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

### 4.1. Summary Results of Exercise Evaluation

The matrix presented in Table 2, on the following page(s), presents the status of all exercise criteria from Federal Register Notice/Vol. 67, No. 80, dated April 25, 2002, that was scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise criteria are listed by number and the demonstration status of those criteria are indicated by the use of the following letters:

M – Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercises)

D – Deficiency (ies) assessed

A – ARCA(s) assessed or unresolved ARCA(s) from prior exercise(s)

N – Not Demonstrated (Reason explained in Section IV.B.)

Blank – Not scheduled for demonstration

Table 2 - Summary of Exercise Evaluation (2 pages)

DATE: 2007-08-14 SITE: D.C. Cook Nuclear Plant, MI A: ARCA, D: Deficiency, M: Met		State INP	State EOC	Tech Support Grp	Field Trm Ctr Cell	Joint Info Ctr	Joint Info Ctr Hotline	State Liaison - BCEOC	MI DEQ REP - BHS	MI DEQ REP-NBSTP	Berrien County INP	Berrien County EOC	Berrien County TACP	BC Personnel in JIC	EAS Station WSM
<b>Emergency Operations Management</b>															
Mobilization	1a1	M	M	M	M	M					M	M		M	
Facilities	1b1														
Direction and Control	1c1		M			M						M			
Communications Equipment	1d1	M	M	M	M	M		M	M	M	M	M	M	M	
Equip & Supplies to support operations	1e1		M	M	M	M		M	M		M	M	M	M	
<b>Protective Action Decision Making</b>															
Emergency Worker Exposure Control	2a1		M	M	M			M							
Radiological Assessment and PARs	2b1			M	M			M							
Decisions for the Plume Phase -PADs	2b2		A	M	M										
PADs for protection of special populations	2c1		M	M								M			
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1														
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1														
<b>Protective Action Implementation</b>															
Implementation of emergency worker exposure control	3a1							M	M		M	M			
Implementation of KI decision	3b1		M										M		
Implementation of protective actions for special populations - EOCs	3c1											M			
Implementation of protective actions for Schools	3c2											M			
Implementation of traffic and access control	3d1		M									M	M		
Impediments to evacuation are identified and resolved	3d2											M			
Implementation of ingestion pathway decisions - availability/use of info	3e1														
Materials for Ingestion Pathway PADs are available	3e2														
Implementation of relocation, re-entry, and return decisions.	3f1														
<b>Field Measurement and Analysis</b>															
Adequate Equipment for Plume Phase Field Measurements	4a1														
Field Teams obtain sufficient information	4a2														
Field Teams Manage Sample Collection Appropriately	4a3														
Post plume phase field measurements and sampling	4b1														
Laboratory operations	4c1														
<b>Emergency Notification and Public Info</b>															
Activation of the prompt alert and notification system	5a1		M					M				A		M	
Activation of the prompt alert and notification system - Fast Breaker	5a2														
Activation of the prompt alert and notification system - Exception areas	5a3														
Emergency information and instructions for the public and the media	5b1		M			M	M	M				M		M	
<b>Support Operations/Facilities</b>															
Mon / decon of evacuees and emergency workers, and registration of evacuees	6a1								M	M					
Mon / decon of emergency worker equipment	6b1								M						
Temporary care of evacuees	6c1														
Transportation and treatment of contaminated injured individuals	6d1														

Table 2 - Summary of Exercise Evaluation (Continued. page 2/2)

DATE: 2007-08-14 SITE: D.C. Cook Nuclear Plant, MI A: ARCA, D: Deficiency, M: Met																				
			EVAC MON/DECON - BHS	EVAC REG - BHS	CONG CARE CTR - BHS	EVAC VEH MON/DECON - BHS	EW MON - NBSTP	EW DECON - NBSTP	EW EQUIP/VEH MON/DECON	MS-1 MED LRMC	MS-1 TRANS MEDIC I AMB	MI DEQ MS-1 TRANS	EV-2 LAKESHORE PS	MI DEQ MS-1 MED FAC	EV-2 BRIDGMAN PS					
Emergency Operations Management																				
Mobilization	1a1																			
Facilities	1b1																			
Direction and Control	1c1																			
Communications Equipment	1d1	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
Equip & Supplies to support operations	1e1	M	M		M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
Protective Action Decision Making																				
Emergency Worker Exposure Control	2a1																			
Radiological Assessment and PARs	2b1																			
Decisions for the Plume Phase -PADs	2b2																			
PADs for protection of special populations	2c1																			
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1																			
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1																			
Protective Action Implementation																				
Implementation of emergency worker exposure control	3a1	M	M		M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
Implementation of KI decision	3b1										M	M	M	M	M	M	M	M	M	
Implementation of protective actions for special populations - EOCs	3c1																			
Implementation of protective actions for Schools	3c2												M					M		
Implementation of traffic and access control	3d1																			
Impediments to evacuation are identified and resolved	3d2																			
Implementation of ingestion pathway decisions - availability/use of info	3e1																			
Materials for Ingestion Pathway PADs are available	3e2																			
Implementation of relocation, re-entry, and return decisions.	3f1																			
Field Measurement and Analysis																				
Adequate Equipment for Plume Phase Field Measurements	4a1																			
Field Teams obtain sufficient information	4a2																			
Field Teams Manage Sample Collection Appropriately	4a3																			
Post plume phase field measurements and sampling	4b1																			
Laboratory operations	4c1																			
Emergency Notification and Public Info																				
Activation of the prompt alert and notification system	5a1																			
Activation of the prompt alert and notification system - Fast Breaker	5a2																			
Activation of the prompt alert and notification system - Exception areas	5a3																			
Emergency information and instructions for the public and the media	5b1																			
Support Operations/Facilities																				
Mon / decon of evacuees and emergency workers, and registration of evacuees	6a1	M	M		M	M	M													
Mon / decon of emergency worker equipment	6b1								M											
Temporary care of evacuees	6c1			M																
Transportation and treatment of contaminated injured individuals	6d1									M	M	M		M						

## 4.2. 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 are definitions of the terms used in this subsection relative to criteria demonstration status.

- **Met** – Listing of the demonstrated exercise criteria 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 criteria under which one or more Deficiencies was assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.
- **Areas Requiring Corrective Action** – Listing of the demonstrated exercise criteria under which one or more ARCAs were assessed during the current exercise or ARCAs assessed during prior exercises 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 that were not demonstrated as scheduled during this exercise and the reason(s) they were not demonstrated.
- **Prior Issues – Resolved** – Descriptions of ARCAs assessed during previous exercises that were resolved in this exercise and the corrective actions demonstrated.
- **Prior Issues – Unresolved** – Descriptions of ARCAs assessed during prior exercises that 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 that are 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."

FEMA has developed a standardized system for numbering exercise issues (Deficiencies and ARCAs). This system is used to achieve consistency in numbering exercise issues among FEMA Regions and site-specific exercise reports within each Region. It is also used to expedite tracking of exercise issues on a nationwide basis.

The identifying number of Deficiencies and ARCAs includes the following elements, with each element separated by a hyphen (-).

- Plant Site Identifier – A two-digit number, corresponding to the Utility Billable Plant Site Codes.
- Exercise Year – The last two digits of the year the exercise was conducted.
- Criterion Number – An alpha and two-digit number corresponding to the criteria numbers in the six Exercise Evaluation Areas described in Federal Register Notice/Vol. 67, No. 80 dated April 25, 2002, which amends FEMA-REP-14, Radiological Emergency Preparedness Exercise Manual.
- Issue Classification Identifier – (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports. Plan Issues are reported to the State(s) via a letter from the Regional Administrator. Therefore, standardized issue numbers are not assigned to Plan Issues.
- Exercise Identification Number – A separate two- (or three-) digit indexing number assigned to each issue identified in the exercise.

## 4.2.1. State Jurisdictions

### 4.2.1.1. Initial Notification Point

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

### 4.2.1.2. State Emergency Operations Center

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

ISSUE NO.: 15-07-2b2-A-01

ISSUE: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make PADs for the general public including KI if ORO policy.

CONDITION: Farmers are being ordered to evacuate and at the same time are being advised to place their animals on stored feed and protected water.

POSSIBLE CAUSE: News Statements are not being reviewed for accuracy prior to their release.

REFERENCE: NUREG-0654 E.5, E.6, E.7.

EFFECT: Farmers could be confused as to evacuate or place their animals on stored feed and protected water.

RECOMMENDATION: Information that will be provided to the Public in News Statements should be carefully reviewed by the State EOC or staff at the JIC prior to release.

SCHEDULE OF CORRECTIVE ACTIONS: Training will be provided to MDA and EMHSD personnel during the 2008 training cycle on the procedures for the different emergency alert levels and the responsibilities/duties under each. This ARCA is unresolved and scheduled for correction at the 2008

## Fermi 2 Exercise.

- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: 2.b.2.

ISSUE NO.: 15-05-2b2-A-01

ISSUE: The first PAO was made at 1055 hours by the GAR in consultation with the ED to evacuate areas 1, 2, and 3 and Lake Michigan out to 5-miles. The EAS message provided to Berrien County from the State of Michigan advised that residents of areas 1, 2, and 3 should evacuate and at the same time advised farmers in area 2 to place their animals on stored feed and protected water.

CORRECTIVE ACTION DEMONSTRATED: At 1155 hours, a PAO was issued by the GAR to evacuate areas 1, 2, 3 and 4. The PAO provided to Berrien County from the State of Michigan did not include any recommendations to farmers to place their animals on stored feed and protected water.

- f. PRIOR ISSUES - UNRESOLVED: None

### 4.2.1.3. Technical Support Group

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

### 4.2.1.4. Field Team Center Cell

- a. MET: 1.a.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None

- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### **4.2.1.5. Joint Information Center**

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

#### **4.2.1.6. Joint Information Center Hotline**

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

#### **4.2.1.7. State Liaison - Berrien County Emergency Operations Center**

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

#### **4.2.1.8. State DEQ Rep - Brandywine High School**

- a. MET: 1.d.1, 1.e.1, 3.a.1, 6.a.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None

- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.1.9. State DEQ Rep - New Buffalo Sewage Treatment Plant

- a. MET: 1.d.1, 1.e.1, 3.a.1, 6.a.1, 6.b.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.1.10. State DEQ Rep - MS-1 Drills - Transportation

- a. MET: 1.e.1, 3.a.1, 3.b.1, 6.d.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.1.11. State DEQ Rep - MS-1 Drills - Medical Facility

- a. MET: 1.e.1, 3.a.1, 3.b.1, 6.d.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.2. Risk Jurisdictions

#### 4.2.2.1. Berrien County Initial Notification Point

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

#### 4.2.2.2. Berrien County Emergency Operations Center

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

ISSUE NO.: 15-07-5a1-A-02

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

CONDITION: The first instructional message failed to identify the local government organization and the official with the authority for providing the alert signal and instructional message. Instead, the Utility was listed as the agency with the authority for issuing the evacuation order.

POSSIBLE CAUSE: The PIO did not utilize the approved pre-scripted message contained in the Berrien County EOP, rather they used a form generated by Berrien County to be used in a Fast Breaker situation.

REFERENCE: NUREG-0654, E.5,6 and 7, and Federal Register, Volume 66, Number 177, page 47547, September 12, 2001 (66 FR 47547).

EFFECT: The public could become confused as to the jurisdictional lines of authority in terms of the authority of the Utility versus the authority of State and County governments and question the authenticity of the instructions.

RECOMMENDATION: Messages should be reviewed to ensure that current, appropriate messages are used to provide information and instructions to the public before being disseminated. The addition of the local government organization and official directing the action should also be incorporated into the Fast Breaker notification forms utilized by the County.

SCHEDULE OF CORRECTIVE ACTIONS: Training will be provided to local and State personnel during the 2008 training cycle regarding the use of the pre-scripted forms. This ARCA is unresolved and scheduled for corrective action at the 2009 D.C. Cook Exercise.

- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

#### 4.2.2.3. Berrien County Traffic and Access Control Point

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

#### 4.2.2.4. County Personnel in JIC

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