

Callaway2COLPEM Resource

From: Johnson, Don
Sent: Thursday, May 28, 2009 7:42 AM
To: Callaway2COL Resource
Subject: FW: Letter from Vanessa E. Quinn Ref: Callaway IFR RA
Attachments: 05-21-09 Letter Williams Callaway IFR RA.pdf; 05-21-09 Letter Williams Callaway IFR RA Enclosure.pdf

From: Dan Barss
Sent: Thursday, May 21, 2009 11:11 AM
To: Don Johnson
Subject: FW: Letter from Vanessa E. Quinn Ref: Callaway IFR RA

For your action.

From: Dowgwillo, Theresa [mailto:Theresa.Dowgwillo@dhs.gov]
Sent: Thursday, May 21, 2009 10:08 AM
To: Kevin Williams
Cc: McCabe, Ron; Dan Barss
Subject: Letter from Vanessa E. Quinn Ref: Callaway IFR RA

Dear Mr. Williams:

Please find attached a letter to your attention from Vanessa E. Quinn, Chief, Radiological Emergency Preparedness Branch, FEMA. The original has been sent to you via normal USPS mail delivery.

Please let me know if I can be of any assistance.

Thank you,

T. René Dowgwillo

Executive Assistant
Radiological Emergency Preparedness Branch
Technological Hazards Division
National Preparedness Directorate
DHS/FEMA
(202) 212-2301 Office
Theresa.Dowgwillo@dhs.gov

Hearing Identifier: CallawayPlant_Unit2_COL_Public
Email Number: 204

Mail Envelope Properties (CEEA97CC21430049B821E684512F6E5ECA3BCF0626)

Subject: FW: Letter from Vanessa E. Quinn Ref: Callaway IFR RA
Sent Date: 5/28/2009 7:41:36 AM
Received Date: 5/28/2009 7:41:33 AM
From: Johnson, Don

Created By: Don.Johnson@nrc.gov

Recipients:
"Callaway2COL Resource" <Callaway2COL.Resource@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

Files	Size	Date & Time
MESSAGE	963	5/28/2009 7:41:33 AM
05-21-09 Letter Williams Callaway IFR RA.pdf	49262	
05-21-09 Letter Williams Callaway IFR RA Enclosure.pdf		722192

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:



FEMA

May 21, 2009

Mr. Kevin Williams
Chief, Licensing and Inspection Branch
Division of Preparedness and Response
Nuclear Security and Incident Response
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Ref: Federal Emergency Management Agency's (FEMA) Interim Finding Report (IFR) for Reasonable Assurance (RA) of the Offsite Emergency Response Plans for the Callaway Nuclear Plant (Callaway) Unit 2 Combined License (COL) Application

Dear Mr. Williams:

Please find enclosed the IFR for RA for Callaway Unit 2, submitted by the Radiological Emergency Preparedness (REP) Program staff from the FEMA Region VII office. Region VII staff have reviewed the information received on February 17, 2009, pertaining to the offsite radiological emergency plans for the Callaway Unit 2 COL application. Plans were reviewed against the fifteen (15) planning standards in NUREG-0654 FEMA REP-1, Revision 1.

Based on our thorough review of plans submitted, and the currently available offsite plans and procedures for the 10-mile Emergency Planning Zone, as well as the 50-mile Ingestion Pathway Zone, FEMA has determined that the plans are adequate, and there is Reasonable Assurance that the plans can be implemented with no corrections needed.

Should you or members of your staff have any questions regarding this matter, please contact Ms. Bonnie Sheffield at 202-212-2120 or Ms. Lisa Banks-Robinson at 202-212-2123.

Sincerely,

A handwritten signature in black ink, appearing to read "Vanessa E. Quinn".

Vanessa E. Quinn
Chief

Radiological Emergency Preparedness Branch

Enclosure: As stated

cc: R. McCabe, FEMA Region VII
D. Barss, NRC

Interim Finding Report for Reasonable Assurance

On the adequacy of offsite

Radiological Emergency Response Planning and Preparedness

For the

Callaway Nuclear Power Plant

Reform, Missouri

May 11, 2009

Prepared by the
U.S. Department of Homeland Security
Federal Emergency Management Agency
National Preparedness Directorate
Technological Hazards Division

Region VII

Table of Contents

Executive Summary.....	2
I. Introduction	
A. General Characteristics of the Callaway Nuclear Plant.....	2
B. Emergency Response Organizations.....	2
C. Plans.....	4
D. Basis for Findings.....	5
E. Evaluation Format.....	5
II. Review and Evaluation of Emergency Preparedness Plans for the Callaway Nuclear Plant against the Planning Standards of NUREG-0654 FEMA-REP-1, Rev. 1	
A. Assignment of Responsibility (Organizational Control).....	7
B. Onsite Emergency Organization.....	22
C. Emergency Response Support and Resources.....	23
D. Emergency Classification System.....	34
E. Notification Methods and Procedures.....	36
F. Emergency Communications.....	42
G. Public Education and Information.....	48
H. Emergency Facilities and Equipment.....	57
I. Accident Assessment.....	65
J. Protective Response.....	72
K. Radiological Exposure Control.....	98
L. Medical and Public Health Support.....	104
M. Recovery and Reentry Planning and Post-Accident Operations.....	108
N. Exercises and Drills.....	113
O. Radiological Emergency Response Training.....	129
P. Responsibility for the Planning Effort: Distribution, Periodic Review and Distribution of Emergency Plans.....	138
III. Post COL Reasonable Assurance Tracking.....	146
IV. Criterion Rating Summary.....	146
V. Reasonable Assurance.....	147
VI. Acronym Key.....	147

Executive Summary

I. Introduction

A. General Characteristics of the Callaway Plant Site

The Callaway Plant site (38°45.7'N 91°46.8'W), consisting of approximately 2,800 acres of rural land, is 10 miles east-southeast of the city of Fulton in Callaway County, Missouri, 40 miles southeast of Columbia, Missouri, 80 miles west of the St. Louis metropolitan area and approximately 120 miles east of the Kansas City metropolitan area. The nearest population center, located 25 miles west-southwest of the site, is Jefferson City, Missouri. The plant site is situated approximately 325 feet above the Missouri River, located approximately five miles to the south of the site.

The 10-mile Emergency Planning Zone (EPZ) for the Callaway Plant Site includes all or parts of the Missouri counties of Callaway, Gasconade, Osage and Montgomery. The City of Fulton, Callaway County, is the major inhabited jurisdiction in these counties and is located approximately 10 miles from the plant site.

The site is owned by AmerenUE, formerly Union Electric Company. AmerenUE is headquartered in St. Louis, Missouri, at One Ameren Plaza, 1901 Chouteau Avenue.

Currently operating on-site is AmerenUE's Callaway Nuclear Power Plant, a Standardized Nuclear Unit Power Plant System (SNUPPS), using a Westinghouse four-loop pressurized reactor and a General Electric turbine-generator. The generating capacity is listed as 1,190 megawatts (net). The operational date for Callaway Nuclear Power Plant was December 19, 1984.

The owner has submitted to the U.S. Nuclear Regulatory Commission a Combined License (COL) Application to construct Callaway Plant Unit 2 on-site in co-location with the current operating plant.

B. Emergency Response Organizations

Final authority for all offsite emergency response actions in response to a radiological accident at the Callaway Plant Site rests with the Governor of the State of Missouri.

The off-site emergency response organization is a joint, cooperative effort by the State of Missouri and its agencies including, in the lead, the State Emergency Management Agency and its consultative, technical support partner agency, the Department of Health and Senior Services, the counties of Callaway, Gasconade, Osage and Montgomery and their respective county agencies and related

emergency management, law enforcement, fire, rescue and emergency medical entities, and Federal agencies operating in support of the State efforts.

State response and support operations in the emergency areas are initiated through decisions made jointly by the Director, State Emergency Management Agency and the Department of Health and Senior Services' Director or their duly appointed representatives.

The respective County Commissions maintain overall direction and control of emergency response for the county and local agencies. In Callaway County, the Mayor of the City of Fulton retains direction and control of the city's response assets in support of the county's efforts.

Specified State emergency response officials, designated by and working through the State Emergency Management Agency, are authorized to request Federal agency support. The county governments may request the State to seek Federal assistance.

Radiological emergency planning at the State level is primarily the responsibility of the State Emergency Management Agency. Radiological emergency planning for the counties is the responsibility of the County Commissions and the coordinators of their emergency management agencies. The State assists county planning efforts. The licensee's emergency planning unit provides consultative and technical assistance to these efforts.

Emergency communications are handled by the State Emergency Management Agency in coordination with the communications entities within the other State agencies. Emergency communications at the county and city level are primary responsibility of each county's emergency communications (911) center. Federal communications systems support these State and county efforts. The licensee, working in concert with State and county governments, maintains an installed range of emergency communications facilities that are interoperable.

Accident assessment, radiological field team monitoring, health hazards assessment and the development of protective action guidelines are responsibilities of the State's Department of Health and Senior Services. These activities are closely coordinated with the State Emergency Management Agency.

Public alert and warning systems include use of the Emergency Alert System (EAS), a warning siren system, a telephonically-based "reverse 911" system, and a network of tone-alert radios provided to every resident, institution and business within the EPZ. Public information, coordinated by the State Emergency Management Agency with support from State, Federal, county and licensee spokespersons and technical experts, is provided via the Joint Information Center located in Jefferson City.

C. Plans

Plans are separately organized at the State and county levels.

Major sections of the State plans are as follows:

- Part I – General
- Part II – Situation and Assumptions
- Part III – Concept of Operations
- Part IV – Emergency Operations and Procedures
- Part V – Training and Exercises

Annexes to the State plan include the following:

- Annex A – State Agency Standard Operating Procedures
- Annex B – State Protective Action Guides
- Annex C – Public Information
- Annex D – Radiation Exposure Control
- Annex E – Training Programs
- Annex F – Emergency Medical Services
- Annex G – Environmental Sampling and Analysis
- Annex H – Federal Agencies and Responsibilities

Major sections of the county plans are the Basic Plan and the following volumes of annexes:

- Annex A – Direction and Control
- Annex B – Emergency Response Support and Resources
- Annex C – Emergency Classification System and Associated County Activities
- Annex D – Notification Methods and Procedures
- Annex E – Emergency Communications
- Annex F – Public Education and Information
- Annex G – Emergency Facilities and Equipment
- Annex H – Accident Assessment
- Annex I – Protective Actions for the General Public
- Annex J – Radiological Exposure Control for Emergency Workers
- Annex K – Medical and Public Health Support
- Annex L – Relocation, Reentry, Return, Recovery
- Annex M – Exercises and Drills
- Annex N – Radiological Emergency Response Training

The four county plans are identical except for discrete references to local agency names and the addition of a statement of authority/responsibility pertaining to the Mayor of the City of Fulton in the Callaway Plant.

Special facility and reception and care center plans are maintained and published

separately by the responsible organizations.

D. Basis for Findings

Findings presented in Part II (following) of this report and summarized in Part IV were based on analyses performed as part of an in-depth review and study of existing plans and procedures. This review and study process included but was not necessarily limited to the following:

- a. Review of the State and county plans for currency and completeness;
- b. Comparison of the content of each to the requirements of NUREG-0654 FEMA-REP-1 and 44 CFR § 350.12(b)(1);
- c. Examination of past State Exercise Reports for evidence of correct demonstration of each planning element in Federally-evaluated biennial exercises;
- d. Examination of Missouri's Annual Letters of Certification (ALC) for conformity of annual operations with published plans;
- e. Summary review of Licensee's application for correlation of certain elements of the licensee's emergency plans with provisions of State and county plans;
- f. Review of separately-published special facility and reception and care facility plans for conformity with State and county plans; and,
- g. Information and guidance provided by staff of the National Preparedness Directorate, Technological Hazards Division, Radiological Emergency Preparedness Program.

An electronic error in the originally-submitted application materials was resolved by technical means, and the comparison of the State and county plans to current plans on file in FEMA Region VII revealed currency and completeness.

The comparison of the planning elements to the requirements of NUREG-0654 FEMA-REP-1 found that the plans were in conformity with the criteria.

Previous exercise reports indicated that exercise performance was in accordance with the published plans.

ALC reviews support the finding that annual operations conform to plans.

Review of the special facility and reception and care center plans found that they were in conformity with State and county plans.

On the basis of the above, the findings in Part II are presented.

E. Evaluation Format

In accordance with a Memorandum of Agreement between the Nuclear Regulatory Commission (NRC) and the Federal Emergency Management Agency

(FEMA), both the NRC and FEMA agreed to furnish assessments, findings and determinations as to whether State, Tribal and local emergency plans and preparedness are adequate and continue to be capable of implementation (e.g., adequacy and maintenance of procedures, training, resources, staffing levels and qualifications, and equipment adequacy). These findings and determinations are used by the NRC under its own rules in connection with its licensing and regulatory requirements, and FEMA supports its findings in the NRC licensing process and related court proceedings of 44 CFR 350.3(f).

In this report, FEMA's findings concerning the adequacy of each element of the plans as evaluated against the planning standards and criteria of NUREG-0654 FEMA-REP-1, Revision 1 are presented in the following format:

- Statement of the Applicable Planning Standard
- Statement of the corresponding Evaluation Criterion
- Statement as to FEMA's finding regarding the adequacy of the reviewed plans in addressing the stated criterion. FEMA's findings will note whether the plans were found to be
 - **Adequate,**
 - **Adequate – corrections must be made,**
 - **Inadequate,** or
 - **Not Applicable (N/A)**
- A list of references to specific areas of the plans addressing the criterion
- A summary of the contents addressing the plan criterion

II. Review and Evaluation of Emergency Preparedness Plans

- A. Assignment of Responsibility (Organization Control) Planning Standard:**
Primary responsibilities for emergency response by the nuclear facility licensee, and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.
- A.1.a. Evaluation Criterion:** *Each plan shall identify the State, local, Federal and private sector organizations (including utilities), that are intended to be part of the overall response organization for Emergency Planning Zones.*

A.1.a. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The “*State of Missouri Nuclear Accident Plan*” (hereinafter “MONAP”) identifies the State, local, Federal and private sector organizations intended to be part of the overall response organization.

The “*Callaway County/Fulton Radiological Emergency Response Plan for an Incident at Callaway Nuclear Power Plant*”, (hereinafter “C-PLAN”) identifies the State, local and private sector organizations intended to be part of the overall response organization.

The “*Gasconade County Radiological Emergency Response Plan*” (hereinafter “G-PLAN”) identifies the State, local and private sector organizations intended to be part of the overall response organization.

The “*Osage County Radiological Emergency Response Plan*” (hereinafter “O-PLAN”) identifies the State, local and private sector organizations intended to be part of the overall response organization.

The “*Montgomery County Radiological Emergency Response Plan*” (hereinafter “M-PLAN”) identifies the State, local and private sector organizations intended to be part of the overall response organization.

A.1.a. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- MONAP, *Introduction*, pages i and ii

Note: *Except for appropriate and discrete differences resulting from local agency identifiers and related information, the Callaway/Fulton, Gasconade, Osage and Montgomery counties' Radiological Emergency Response Plans are essentially identical. Consequently, following sections of this report may reference all three, combined, as "COUNTY PLANS."*

C-PLAN References:

- Annex A,; II, B
- * Appendix 4

G-PLAN References:

- Annex A,; II, B
- * Appendix 4

O-PLAN References:

- Annex A,; II, B
- * Appendix 4

M-PLAN References:

- Annex A,; II, B
- * Appendix 4

A.1.a. Plan Content:

MONAP Content:

The MONAP, *Introduction*, pages i and ii, identifies 15 state agencies, organization or offices, 10 agencies or organizations in each county or local jurisdiction, two voluntary agencies, 13 Federal agencies, and the utility as organizations intended to be part of the overall emergency response organization in the event of an incident at Callaway Nuclear Power Plant.

COUNTY PLANS Content:

The COUNTY PLANS, Appendix 4, *Emergency Response Personnel and Agencies*, list the agencies that are intended to constitute the emergency response organization in Callaway, Gasconade, Osage and Montgomery counties.

The COUNTY PLANS, Annex A, Part II, Section B detail the organizational responsibilities of each agency constituting the emergency response organization.

A.1.b. Evaluation Criterion: *Each organization and suborganization having an operational role shall specify its concept of operations, and its relationship to the total effort.*

A.1.b. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The *Missouri Nuclear Accident Plan (MONAP)* and the COUNTY PLANS (Callaway/Fulton, Gasconade, Osage and Montgomery counties' *Radiological Emergency Response Plans*) specify the concepts of operation and relationships to the total response efforts for each organization and suborganization having an operational role in responding to an incident at Callaway Nuclear Power Plant.

A.1.b. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Basic Plan*, III. B., pages 15 – 21
- Annex H

COUNTY PLANS References:

- Annex A, *Direction and Control*
- Annex B, *Emergency Response Support and Resources*

A.1.b. Plan Content:

MONAP Content:

Pages 15 through 21 of the MONAP, Basic Plan, Part III, Section B, detail the roles and organizational concepts of operation for each state agency.

Pages H-1 through H-3 of Appendix H detail the organizational roles and concepts of operation for Federal and volunteer resources.

COUNTY PLANS Content:

Annex A, pages A-1 through A-7, detail the concept of operations and

responsibilities and each agency constituting the counties' emergency response organization.

Annex B, pages B-1 through B-7, detail the concepts of operations and responsibilities of the State and Federal agencies anticipated to support the counties' emergency response organizations.

A.1.c Evaluation Criterion: *Each plan shall illustrate these relationships in a block diagram.*

A.1.c. Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The Missouri Nuclear Accident Plan contains an organizational chart at Appendix 1 that meets the requirements of this criterion.

The Callaway/Fulton, Gasconade, Osage and Montgomery counties' Radiological Emergency Response Plan (RERP) include organization charts of the Emergency Response Organizations that includes a depiction of the relationship of the State Emergency Management Agency to the other, identified agencies in Attachment 1 to Annex A, *County Emergency Response Organization*. Further, the county plans contain an organizational chart for the respective county Emergency Operations Centers.

A.1.c. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 1, *Organization Chart for The Callaway Plant and Cooper Nuclear Station*

COUNTY PLAN References:

- Supplement 1 to Procedure 13, *EOC Organization Chart*
- Attachment 1 to Annex A, *County Emergency Response Organization*

A.1.c. Plan Content:

MONAP Content:

The organizational chart cited and reference above is found in Appendix 1.

COUNTY PLANS Content:

The organizational chart cited and referenced above is found in Attachment 1 to Annex A of each plan.

The related emergency operations center organization chart is Supplement 1 to Procedure 13 in each plan.

A.1.d. Evaluation Criterion: *Each organization shall identify a specific individual by title who shall be in charge of the emergency response.*

A.1.d. Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The Missouri Nuclear Accident Plan states “State response and support operations in the emergency areas will be initiated through decisions made jointly by the Director, State Emergency Management Agency and the Department of Health and Senior Services’ Director or their duly appointed representatives, or on request of affected governmental officials.”

Procedure 13 of the COUNTY PLANS specifies that the County Commission shall be part of the Operations group consisting of the heads of response agencies and that “is directed by the County Commission;” further, Annex A states, “The County Commission will maintain overall direction and control of emergency response for the County.” Inasmuch as the C-PLAN is the functional document for both Callaway County and the City of Fulton, provision is made for the responsibilities of the Mayor of Fulton.

A.1.d. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Basic Plan, III.A.4, *Direction and Control*

COUNTY PLAN References:

- Annex A, I. *Direction and Control*
- Annex A, II.A.2. *Concept of Organization*

A.1.d. Plan Content:

MONAP Content:

The *Basic Plan*, Part III, Section A, subsection 4, states “State response and

support operations in the emergency areas will be initiated through decisions made jointly by the Director, State Emergency Management Agency and the Department of Health and Senior Services' Director or their duly appointed representatives, or on request of affected governmental officials.”

C-PLAN Content:

Annex A, Part I, Section A, states, “The County Commission/Mayor will maintain overall direction and control of emergency response for the County/City respectively.”

Annex A, Part II, Section A, subsection 2, states, “The County Commission will maintain exclusive jurisdiction over County response activities with cooperative support from the Mayor.”

Annex A, Part II, Section A, subsection 3, states, “The Mayor will maintain exclusive jurisdiction over City response activities with cooperative support from the County Commission.

G-PLAN, O-PLAN and M-PLAN Content:

Annex A, Part I, Section A states, “The County Commission will maintain overall direction and control of emergency response for the County.”

Annex A, Part II, Section A, subsection 2, states, “The County Commission will maintain exclusive jurisdiction over County response activities.”

A.1.e. Evaluation Criterion: *Each organization shall provide for 24-hour per day emergency response, including 24-hour per day manning of communications links.*

A.1.e. Statement:

The FEMA Review found the plans addressing this criterion to be adequate – corrections must be made. All individual state agency Standard Operating Procedures do not specify provision of 24-hour staffing when required.

The MONAP states that 24-hour staffing of Emergency Operations Center key staff will be provided on a 24-hour per day basis.

Provision is made in Appendix 5 for continuous operation of communications facilities.

Twenty-four hour staffing is adequately addressed in the Standard Operating Procedures for the Public Service Commission, Department of Transportation

and State Water Patrol

The Standard Operating Procedures contained in Annex A for the Departments of Agriculture, Conservation, Health and Senior Services, Insurance, and Natural Resources, the Missouri Highway Patrol and the Family Support Division do not address 24-hour staffing.

Note: While repeated evaluated exercises, drills, dress rehearsals and actual events have demonstrated the ability of the State to staff and operate its emergency response organization and communications facilities on a 24-hour basis, this specific criterion has not been fully addressed by specific language within all portions of the State plan. Consequently, the plans for the Departments of Agriculture, Conservation, Health and Senior Services, Insurance, and Natural Resources, the Missouri Highway Patrol and the Family Support Division must be amended in the next yearly planning cycle to address this criterion fully.

A.1.d. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * Attachment 5 to Annex A, State EOC Key Staff
- Appendix 5, Part II
- Annex A, Missouri Adjutant General, Part III, Section A
- Annex A, Public Service Commission, Part IV, Section D
- Annex A, Department of Transportation, Part V, Section B
- Annex A, State Water Patrol, Attachment I, Part 1, Section A

COUNTY PLANS References:

- Annex A, Part I, Section E
- Annex D, Part II, Section A
- Annex D, Part II, Section B
- Annex E Part I, Section B

A.1.e. Plan Contents:

MONAP Content:

Attachment 5 to Annex A, *State EOC Key Staff*, identifies the Operations Officer, Assistant Operations Officer, Communications Officer, EAS Coordinator, *Sentry* Operator (or clerk), Telephone Operator #1 (Gasconade County), Telephone Operator #2 (Callaway County), Telephone Operator #3 (Montgomery County) and Telephone Operator #4 (Osage County) as positions to be staffed during an incident at Callaway Nuclear Power Plant.

Appendix 5, Section II, Communications, states, “Twenty-four hour notification is accomplished through the Missouri State Highway Patrol, Troop F 24 hour dispatch/communication center, SEMA's 24 hour Duty Officer Page System, County 911 24 hour dispatch, and other state agencies by telephone, office and home telephone.”

Annex A, *Missouri Adjutant General*, Part III, Section A, specifies 24-hour operation.

Annex A, *Public Service Commission*, Part IV, Section D, provides for continuous staffing as required.

Annex A, *Department of Transportation*, Part V, Section B, specifies that staffing will be provided to facilitate radio operation in the State EOC and department's district offices.

Annex A, *State Water Patrol*, Attachment I, Part 1, Section A, specifies the assignment of personnel from the Jefferson City offices for response duties.

COUNTY PLANS Content:

Annex A, Part I, Section E states, “The Emergency Response Organization, which maintains the capability for 24-hour operations on a protracted basis, will perform direction and control activities from the ...County Emergency Operations Center.”

Annex D, Part II, Section A, *Sentry Radio System/Backup Radio System*, and Section B, discusses the provision of 24-hour communications.

Annex E. Part I, Section B, specifies that the 24-hour manning of the counties' emergency communications centers.

- A.2.a. Evaluation Criterion:** *Each organization shall specify the functions and responsibilities for major elements and key individuals by title, of emergency response, including the following: Command and Control, Alerting and Notification, Communications, Public Information, Accident Assessment, Public Health and Sanitation, Social Services, Fire and Rescue, Traffic Control, Emergency Medical Services, Law Enforcement, Transportation, Protective Response (including authority to request Federal Assistance and to initiate other protective actions), and radiological exposure control. The description of these functions shall contain a clear and concise summary such as a table of primary and support responsibilities using the agency as one axis and the function as the other.*

A.2.a. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The functions and responsibilities of each of the key elements and individuals of emergency response are detailed in both the MONAP and COUNTY PLANS.

The authority to request Federal Assistance is specified in the MONAP.

The authority to initiate protection actions is outlined in both the MONAP and COUNTY PLANS.

A.2.a.. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Basic Plan, Part III, Section A
- Basic Plan, Part III, Section B, *State Agencies and Responsibilities*, pages 15 – 21
- Annex A, *State of Missouri Emergency Management Agency Standard Operating Procedure*
- Annex A, *State of Missouri Adjutant General Standard Operating Procedure*
- Annex A, *State of Missouri Department of Agriculture Standard Operating Procedure*
- Annex A, *State of Missouri Department of Conservation Standard Operating Procedure*
- Annex A, *State of Missouri Family Support Division Standard Operating Procedure*
- Annex A, *State of Missouri Department of Health and Senior Service Standard Operating Procedure*
- Annex A, *State of Missouri Highway Patrol Standard Operating Procedure*
- Annex A, *State of Missouri Department of Insurance Standard Operating Procedure*
- Annex A, *State of Missouri Department of Natural Resources Standard Operating Procedure*
- Annex A, *State of Missouri Water Patrol Standard Operating Procedure*
- * Attachment 1 to Annex H

COUNTY PLANS References:

- Annex A, Attachment 2, *Primary and Support Responsibility Table*
- Annex A, Part II, Section B, subsections 1 *et seq.*

- * Procedures 1 through 15, inclusive, of each plan
- * Annex I, *Protective Actions for the Public*, Part I, Section B, subsection 4
- * Annex I, *Protective Actions Determination*

A.2.a. Plan Contents:

MONAP Contents:

A tabular summary of agency responsibilities is found at MONAP, *Basic Plan*, page 20.

The MONAP, *Basic Plan*, Part III, Section A, states, “The State Emergency Management Agency (SEMA) coordinates actions and operations involving the response and coordinates resources required to support decisions affecting the emergency. The Department of Health and Senior Services (DHSS) is responsible for recommendations affecting the protective actions, dose, dose commitment during an emergency, and recovery in the emergency area.”

The MONAP, *Basic Plan*, Part III, Section A, subsection 1, states that the State Emergency Management Agency also coordinates nuclear incident response planning, training, and notification for the state, coordinates communications and radiological monitoring support, coordinates state and federal support to local governments, advises and assists state and local agencies according to SOP, coordinates staffing of decontamination facilities and radiological monitors for reception and care centers, and performs other functions as set forth in the SEMA SOP found in Annex A.

The MONAP, *Basic Plan*, Part III, Section A, further details key functions of the Adjutant General, Department of Agriculture, Department of Transportation, State Highway Patrol, Public Service Commission, Department of Natural Resources, Attorney General, Department of Conservation, State Water Patrol, and the Division of Environmental Health and Safety at University Medical Center.

These primary and additional support functions are summarized in a table located at MONAP, *Basic Plan*, page 20. County functions (disaster area personnel evacuation, control of access routes, emergency ground transportation, keeping evacuation routes open, security of evacuated areas, fire protection in evacuated areas, emergency sanitation services assembly areas, emergency potable water, emergency rescue operations and emergency health services) are also referenced in comment.

Annex A of the MONAP provides detailed standard operating procedures based upon and supporting core functions for State of Missouri Emergency

Management Agency, Adjutant General, Missouri Department of Agriculture, Missouri Department of Conservation, the Family Support Division, Missouri Department of Health and Senior Service, Missouri Highway Patrol, Missouri Department of Insurance, Missouri Department of Natural Resources and Missouri Water Patrol.

COUNTY PLANS Contents:

The responsibilities of each agency/individual constituting the counties' emergency response organizations are found at Annex A, Attachment 2, *Primary and Support Responsibility Table*.

The responsibilities and tasks associated with member entities of the emergency response organizations are located at Annex A, Part II, Section B, subsections 1 *et seq.*

Procedures 1 through 15, inclusive, of COUNTY PLANS detail standard operating procedures (access and traffic control, radiological exposure control, emergency notification, transportation, impediment removal, public alert/protective action instructions, protective action decision-making, security, public information, communications and message control, EOF liaison, radioprotective drugs, EOC operations, relocation/reentry/return/recovery, and emergency equipment control) based on these responsibilities.

Appendix 3 of each plan cross-references the portions of the plans to be implemented for each area of responsibility.

Annex I details protective action decision-making and implementation.

A.2.b. Evaluation Criterion: *Each plan shall contain (by reference to specific acts, codes or statutes) the legal basis for such authorities.*

A.2.b. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Basic Authority for the development and implementation of the response plans for the State of Missouri rests upon Chapter 44, Revised Statutes of the State of Missouri (RSMo), the State Disaster Operations Plan, and Governor's Executive Order No. 79-19.

These statutes and orders are also the basis for COUNTY PLANS.

Additional, specific authorities supplement these authorities for the Department of Agriculture, Department of Conservation, Department of Health and Senior Services, Highway Patrol, Department of Natural Resources, Public Service

Commission and Department of Transportation.

A.2.b. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Basic Plan*, Part 1, Section A
- * Annex A, agency Standard Operating Procedures

COUNTY PLANS References:

- Basic Plan, Part III, Sections B and E

A.2.b. Plan Contents:

MONAP Contents:

The *Basic Plan*, Part I, Section A, cites Chapter 44 RSMo and Missouri Executive Order (EO) 79-19 as the basis in authority for the State Emergency Management Agency.

Specific, supplemental authorities, found at *Annex A* in the individual agencies' standard operating procedures are cited for the Department of Agriculture (Section 261.0020 and Chapter 265 RSMo), Department of Conservation (Missouri Constitution Article 4, Sections 40 – 45, and Chapter 252 RSMo), Department of Health and Senior Services (Section 192.400 of the Missouri Radiation Law), Highway Patrol (Chapter 43 RSMo), Department of Natural Resources (Chapters 203, 204 and 460 RSMo and 10 Consolidated State Regulations (CSR) 10, 20 and 60), Public Service Commission (Section 393.130 RSMo) and Department of Transportation (Chapter 44 RSMo).

COUNTY PLANS Contents:

Per Basic Plan, Part III, Sections B and E, provide the legal authority (44 RSMo and EO 79-19) for the radiological emergency preparedness programs of the counties.

- A.3. Evaluation Criterion:** *Each plan shall include written agreements referring to the concept of operations developed between Federal, State and local agencies and other support organizations having an emergency response role within the Emergency Planning Zones. The agreements shall identify the emergency measures to be provided and the mutually acceptable criteria for their implementation and specify the arrangement for exchange of information. These agreements may be provided in an appendix or the plan itself may contain descriptions of these matters and a signature page in the*

plan may serve to verify the agreements. The signature page format is appropriate for organizations where response functions are covered by laws, regulations or executive orders where separate agreements are not necessary.

A.3. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The required Letters of Agreement are contained within the plans. Special facility plans, published separately, include LOAs as required.

A.3. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A
- Special Facility Plans
- Reception and Care Plans

COUNTY PLANS References:

- Appendix 4

A.3. Plan Content:

MONAP Plan Content:

Required Letters of Agreement for the Office of the Adjutant General of the Missouri National Guard, Department of Agriculture, Department of Conservation, Department of Social Services (for the Family Services Division), Department of Health and Senior Services, Missouri State Highway Patrol, Department of Insurance, Department of Natural Resources, Missouri Public Services Commission, Department of Transportation and Missouri State Water Patrol are included in each Standard Operating Procedure found at Annex A.

COUNTY PLANS Content:

Appendix 4 of each plan contains the required Letters of Agreement.

- A.4. Evaluation Criterion:** *Each principal organization shall be capable of continuous (24-hour) operations for a protracted period. The individual in the principal organization who be responsible for assuring continuity of resources (technical, administrative and material) shall be specified by title.*

A.4 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

At both the State and local levels, the Emergency Management Directors are responsible for sustained 24-hour operational support.

A.4 References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Basic Plan, Part III, Section A. subsections * 1 and 15
- * Basic Plan, Part III, Section A, subsection 4

COUNTY PLANS References:

- Annex G, Part I, Section A, subsection 3, paragraphs c and d

A.4. Plan Contents:

MONAP Contents:

In the event of an emergency at Callaway Nuclear Power Plant, the State *Basic Plan* (citations above) provides that the State response and support operations will be initiated through decisions made jointly by the Director, State Emergency Management Agency and the Department of Health and Senior Services' Director or their duly appointed representatives.

The *Basic Plan* further states, "State Emergency Management Agency (SEMA), under the control of its Director, coordinates actions and operations involving the response and coordinates resources required to support decisions affecting the emergency."

Finally, the *Basic Plan* states, "When it is foreseen that the need for extended operations is imminent, the individual exercising command and control at each facility will declare the need to implement a shift work schedule." In the case of the State EOC, this would be the Director of the State Emergency Management Agency.

COUNTY PLANS Contents:

Annex G states "The Facility Support group consists of security and custodial personnel, and others involved in maintaining the EOC. The Emergency Management Director will direct this group."

Further, the annex states “The Clerical group consists of office personnel, including typists and record keepers, message control personnel, and clerks involved in providing assistance to the Operations group. The EOC Clerk will direct this group.”

B. Onsite Emergency Organization

B.1 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

B.2 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

B.3 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

B.4 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

B.5 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

B.6 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

B.7 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

B.8 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

B.9 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

C. Emergency Response Support and Resources Planning Standard:
Arrangments for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

C.1 *The federal government maintains in-depth capability to assist licensees, States and local governments through the Federal Radiological Monitoring and Assessment Plan (formerly Radiological Assistance Program (RAP) and Interagency Radiological Assistance Plan (IRAP). Each State and licensee shall make provisions for incorporating the Federal response capability into its operation plan. Each State and licensee shall make provisions for incorporating the Federal response capability into its operation plan, including the following:*

C.1.a *Evaluation Criterion: specific persons by title authorized to request Federal assistance; see A.1.d., A.2.a.*

C.1.a. Statement

The FEMA Review found the plans addressing this criterion to be adequate.

Persons with authority to request Federal assistance are identified by title in the State plan.

C.1.a. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex H, page H-1.1
- * Annex H, page H-1
- * *Basic Plan*, Part I, Section A, subsection 6
- * *Basic Plan*, Part IV, Section C, subsection 2, paragraph c
- * Annex A, *State Emergency Management Agency Standard Operating Procedures*, Part IV, Section A
- * Annex A, *Department of Health and Senior Services Standard Operating Procedure*, Part II, Section K

COUNTY PLANS References:

- This criterion is not applicable to county and local agencies.

C.1.a. Plan Contents

MONAP Plan Contents:

The MONAP specifies that the following personnel are authorized to request FRMAP assistance: Director, State Emergency Management Agency (SEMA); Operations Officer, SEMA; REP Planner, SEMA; Chief, Department of Health and Senior Services Section for Environmental Public Health; and, Assistant Chief, Department of Health and Senior Services Section for Environmental Public Health.

The MONAP *Basic Plan* states “The counties will direct all requests for state and/or federal assistance to the SEOC.”

The MONAP *Basic Plan* states that SEMA will request and coordinate the emergency operations of federal and state agencies and disaster relief organizations in support of local governments. Annex H further states, “Federal agency assistance will be requested, as required, by telephone from the State Emergency Operations Center, to FEMA Region VII which will contact individual federal agencies from which assistance is requested.”

The *Standard Operating Procedures for the State Emergency Management Agency* states that assistance of other state and federal agencies or that of adjacent states will be obtained and coordinated by SEMA.

Annex A, *Department of Health and Senior Services Standard Operating Procedure*, Part II, Section K states, “DHSS has the responsibility of maintaining liaison with other state and federal agencies and private sector organizations which are capable of giving professional radiation safety assistance in case of a major nuclear incident. Federal government radiation emergency response teams are available through the National Response Plan from the U.S. Department of Energy Operations in Oak Ridge, Tennessee and Las Vegas, NV.”

COUNTY PLANS Contents:

This criterion is not applicable to county and local agencies.

C.1.b. Evaluation Criterion: *specific Federal resources expected, including expected times of arrival at specific nuclear facility sites;*

C.1.b. Statement

The FEMA Review found the plans addressing this criterion to be adequate.

Listing of response times for key, Federal resource agencies are provided in the State plan.

C.1.b References

MONAP References:

- Attachment 3, *Response Times for Federal Agencies*, to Annex H

COUNTY PLANS References:

- Not applicable to county jurisdictions

C.1.b Plan Contents:

MONAP Contents:

Response times for the following agencies are provided:

FRMAC	mobilization 4 hrs.	travel 1.5 – 10 hrs	on-site readiness 2-8 hours
EPA RERT	mobilization 8 hrs.	travel 2-20 hrs.	on-site readiness 2-4 hours
FBI	mobilization .5 hr.	travel 1 hour	immediately ready
FDA	mobilization 1-4 hrs	travel 2-4 hours	immediately ready

Other Federal agency response teams will vary widely depending on the type of resources required and the site from which those resources will be deployed. Nominally, a 2 hour mobilization time and 2 hour travel time are assumed for more-local resources.

COUNTY PLANS Contents:

N/A

- C.1.c. Evaluation Criterion:** *specific licensee, State and local resources available to support the Federal response, e.g., air fields, command posts, telephone lines, radio frequencies and telecommunications centers.*

C.1.c. Statement

The FEMA Review found the plans addressing this criterion to be adequate.

Federal resource agencies expected to be part of the overall response organization are pre-identified, and provision is made to integrate their arrival and operations.

C.1.c. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * *Introduction*, page 2
- * Appendix 5, Part IV, *Communications*
- Attachment 2 to Annex H
- Annex A, *State Emergency Management Agency Standard Operating Procedures*, Part V
- * Attachment 1 to Annex C, *Public Information Procedure*, Part III, Section B

COUNTY PLANS References:

- Procedure 11, *EOF Liaison*, Part III, Section A
- Annex B, *Emergency Response Support and Resources*, Part II, Section D
- Annex B, *Emergency Response Support and Resources*, Part IV, Section B
- Annex B, *Emergency Response Support and Resources*, Part IV, Section C

C.1.c. Plan Content:

MONAP Content:

The *Introduction* to the MONAP identifies the following Federal agencies as part of the overall response organization for the Callaway plant: Department of Energy; Environmental Protection Agency; Department of Defense; Federal Aviation Administration; Federal Bureau of Investigation; National Weather Service; Department of Homeland Security (U.S. Coast Guard); US Army Corps of Engineers; Federal Emergency Management Agency; Department of Agriculture; Food and Drug Administration.

Per Attachment 2 to Annex H, the State of Missouri will assist incoming Federal agencies needing to use airports and aircraft facilities in the vicinity of the Callaway plant. Specifically, Lambert Field – St. Louis, MO (STL), Jefferson City Airport (JEF) and Columbia Regional Airport (COU) are identified.

This same attachment also states that SEMA will be responsible for providing workspace within the State EOC and “limited” communications facilities to Federal agencies. The plan further states, “federal agencies that may require resource support requirements will be arranged for the responding federal agencies by the GSA Emergency Resource Coordinator located in Kansas City, Missouri.”

Annex A, *State Emergency Management Agency Standard Operating Procedures*, Part V, states, “support will be affected from the Emergency Operations Center, Jefferson City, and augmented by the SEMA mobile communications van, or emergency communications available in the affected area (e.g., sheriff or local emergency preparedness communications). If radiological monitoring assistance is requested by DHSS or is required by the activation of Reception and Care Center(s), personnel trained in monitoring and decontamination may be supplied by the MoRET, National Guard, State Dept. of Transportation, Homeland Security Response Teams, and/or selected fire departments.”

Attachment 5, Part IV, *Communications*, states, “Communications with federal agencies shall be telephone (primary), National Warning System (NAWAS), or Federal National Radio System (FNARS). FEMA Region VII, Kansas City, shall be SEMA's point of contact with all federal agencies.”

Attachment 1 to Annex C, *Public Information Procedure*, Part III, Section B, states, “County and federal emergency organizations may designate their respective spokespersons to provide media briefings from the JPIC.”

COUNTY PLANS Content:

Procedure 11, *EOF Liaison*, Part III, Section A states, “The Emergency Operations Facility (EOF), located approximately one mile west of the Callaway Plant, is the primary location for coordination among Plant, Federal, State, and Local emergency response organizations.”

Annex B, *Emergency Response Support and Resources*, Part II, Section D, states, “The following local resources are available to support a federal response: Limited office space in the County Courthouse; Commercial telephone communications; Living accommodations at motels in the cities of Montgomery City, High Hill, and Mexico. This annex further identifies the following airports – Fulton, Jefferson City, Columbia Regional, Hermann Airport, Lambert-St. Louis, and Kansas City International – and states, “5. Additional required resources can be made available through the GSA Emergency Response Coordinator in Kansas City, Missouri, as described in the Missouri Nuclear Accident Plan.

Annex B, *Emergency Response Support and Resources*, Part IV, Section B, states, “Space for County, State and Federal response personnel is reserved at the EOF.”

Annex B, *Emergency Response Support and Resources*, Part IV, Section C, states, “The EOF has communications capability, primarily telephone, with County, State, and Federal agencies, provides protection from radiological

hazards and storage of radiological equipment, contains a radiological analysis laboratory, and contains decontamination facilities for EOF personnel.”

C.2.a. Evaluation Criterion: *Each principal offsite organization may dispatch representatives to the licensee’s near-site Emergency Operations Facility. (State technical analysis representatives at the nearsite EOF are preferred.)*

C.2.a. Statement

The FEMA Review found the plans addressing this criterion to be adequate.

Both the State and county plans provide for the dispatch of representatives, including technical analysis representatives, to the Emergency Operations Facility for Callaway plant.

C.2.a. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * *Basic Plan*, Part I, Section D, subsection 15
- *Basic Plan*, Part III, Section A, subsection 6
- * *Basic Plan*, Part IV, Section C, subsection 1, paragraph a
- * Annex A, *Department of Health and Senior Services Standard Operating Procedure*, Part III, Section C, subsection 2
- * Attachment 1 to Annex C, *Public Information Procedures*, Part IV, Section D

COUNTY PLANS References:

- * Procedure 3, Part IV, Section D
- * Procedure 11, *EOF Liaison*, Part III, Section C
- * Procedure 11, *EOF Liaison*, Part III, Section D
- * Supplement 3 to Procedure 11, *Callaway Plant EOF Emergency Organization*
- Annex B, *Emergency Response Support and Resources*, Part IV, Section B

C.2.a. Plan Content:

MONAP Content:

The *Basic Plan*, Part I, Section D, subsection 15, provides that the Governor’s Authorized Representative (GAR) is the interface between the utility, NRC and State Emergency Management Agency as a representative for the State of Missouri and the counties and that the GAR is located in the EOF during the

emergency phase.

The *Basic Plan*, Part III, Section A, subsection 6, states, “Representatives from the State Emergency Management Agency and Department of Health and Senior Services act as an operational staff” at the EOF.

The *Basic Plan*, Part IV, Section C, subsection 1, paragraph a, states, “Local government involved in the emergency may dispatch a representative to the EOF in accordance with the local emergency response plans.”

Annex A, *Department of Health and Senior Services Standard Operating Procedure*, Part III, Section C, subsection 2, provides, “DHSS will establish a base of operations at the Emergency Operations Facility (EOF).”

Attachment 1 to Annex C, *Public Information Procedures*, Part IV, Section D, states, “A SEMA Representative will be located at the EOF/FCP. Primary responsibilities of this person will be to authenticate and disseminate plant status and protective action recommendation information to the JPIC.”

COUNTY PLANS Content:

Procedure 3, Part IV, Section D, states that the county commissioner may dispatch a representative to the EOF.

Procedure 11, *EOF Liaison*, Part III, Section C, states, “Technical experts such as engineers, health physicists, chemists, and emergency management personnel will be available for advice and consultation at the EOF.”

Procedure 11, *EOF Liaison*, Part III, Section D, states, “The EOF Liaison Representative is able to directly interact with other emergency response organizations, and provide additional information and recommendations to the Commissioner, as well as getting clarification and interpretation of the information provided through regular notification channels to the EOC. He is also able to provide more detailed information about County emergency response efforts to the other emergency organizations.”

Supplement 3 to Procedure 11, *Callaway Plant EOF Emergency Organization*, provides a table detailing personnel assigned to the EOF.

Annex B, *Emergency Response Support and Resources*, Part IV, Section B, states, “Space for County, State and Federal response personnel is reserved at the EOF. The Commissioners in the EOC will, at their discretion, dispatch a representative to serve as liaison between the County and Callaway Plant upon activation of the EOF.”

C.3 Evaluation Criterion: *Each organization shall identify radiological*

laboratories and their general capabilities and expected availability to provide radiological monitoring and analyses services which can be used in an emergency.

C.3 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The University of Missouri Research Reactor (MURR) laboratory is identified as the laboratory to be used for incidents affecting Callaway. The capabilities of the laboratory are detailed. The EPA laboratory, the National Air and Radiation Environmental Laboratory (NAREL) is identified as a backup to MURR.

C.3 References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex G, *Environmental Sampling and Analysis*, Part III, Section C
- Annex G, *Environmental Sampling and Analysis*, Part III, Section D
- Attachment 1 to Annex G, *Radiochemical Analysis Capability*, Part I
- Attachment 1, Annex G, Table 1, *Detection Limits For Typical Environmental Samples Routinely Measured At MURR*
- Annex H, Part III

COUNTY PLANS References:

This criterion is not applicable to local organizations.

C.3. Plan Contents:

MONAP Contents:

In a note to Annex G, *Environmental Sampling and Analysis*, Part III, Section C, the plan cites, that the University of Missouri Research Reactor (MURR) “is intended to be the initial analysis laboratory, with NAREL being the first alternate. As the initial analysis laboratory, MURR is expected to act as an advisor to the DHSS personnel at the SEOC/EOF. The Federal Radiological Monitoring and Assessment Center (FRMAC) is intended to be the long-term radiochemical analysis capability for any long-term response to an accident at Callaway or Cooper Nuclear Stations. All previous samples taken and stored at MURR and/or NAREL will be transferred to the FRMAC upon their activation.”

Annex G, *Environmental Sampling and Analysis*, Part III, Section C, states in part that “SEMA, at the request of MURR, will provide temporary facilities to MURR for storage of samples collected for radiochemical analysis. An example

of this may be a refrigerated milk truck from a local dairy...”

Attachment 1 to Annex G, *Radiochemical Analysis Capability*, Part I, states, “The MURR at Columbia has a Nuclear Analysis Program staffed by three scientists with doctoral degrees in the nuclear field, three radio chemists, four research specialists and two lab technicians. In addition, the Reactor Health Physics Group is responsible for environmental sample analysis and has two health physicists and four health physics technicians. All of the above named individuals routinely conduct gamma-ray spectroscopy and alpha and beta counting on a wide variety of bioenvironmental samples.”

Attachment 1, Annex G, *Radiochemical Analysis Capability*, Part II, states, “The MURR Nuclear Analysis Program (NAP) maintains equipment capable of performing a variety of nuclear spectroscopy functions. Detector systems used include fifteen high purity germanium (HPGe) semiconductor detectors ranging in relative counting efficiency from approximately 20% to greater than 80%, a Sodium Iodide (NaI) well detector and two liquid scintillation counters one of which is under computer control and capable of alpha/beta spectroscopy. The NaI detector is configured as a stand-alone system controlled by a ND66 multichannel analyzer.”

The cited part continues, “High-resolution gamma ray spectroscopy is performed using Canberra’s ND9900 spectroscopy applications package running on five clustered VAX station 3100/38 computers. The clustered systems support over six gigabytes of disk storage as well as 4mm DAT tape, TK50 tape, and 128 MB magneto optical disk. A variety of terminals and networked personal computers located throughout the building can access these systems using decnet and TCP/IP transports. Each of the HPGe detectors is connected to the building Ethernet network via a Canberra data acquisition interface module and may be accessed by any of the five VAX stations. The multiply redundant nature of this arrangement provides a degree of fault tolerance in that there is no single critical component in the counting system. The HPGe detectors are set up for a variety of counting methods including four in automatic sample changers, three in a low background laboratory, two with thin beryllium windows enabling counting of low energy photons and two located in a laboratory equipped with a pneumatic transfer irradiation system for rapid analysis of trace elements by neutron activation analysis.”

Attachment 1, Annex G, Table 1, *Detection Limits For Typical Environmental Samples Routinely Measured At MURR*, provides detection limits for various analysis activities.

Annex H, Part III, states, “Due to the fact that the University of Missouri-Columbia laboratory is unable to perform analyses for Strontium - 89 or Strontium - 90, the EPA has agreed to provide assistance through the National Air and Radiation Environmental Laboratory (NAREL), Montgomery,

Alabama.”

COUNTY PLANS Contents:

This criterion is not applicable to local organizations.

- C.4 Evaluation Criterion:** *Each organization shall identify nuclear and other facilities, organizations or individuals which can be relied upon in an emergency to provide assistance. Such assistance shall be identified and supported by appropriate letters of agreement.*

C.4 Statement

The FEMA review found the plans addressing this criterion to be adequate.

Additional resources are duly identified, their responsibilities detailed and, as appropriate, documented by letters of agreement.

C.4 References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex H, *Federal and Volunteer Agencies and Responsibilities*, pages H-1 through H-3

COUNTY PLANS References:

- Annex B, *Emergency Response Support and Resource*
- Procedures 1 through 15

C.4 Plan Content:

MONAP Content:

Annex H, *Federal and Volunteer Agencies and Responsibilities*, pages H-1 through H-3, identifies the agencies expected to contribute support upon request. The American Red Cross and Missouri Radiological Emergency Team (MoRET) are identified as potential contributors.

Reference is made, in numerous locations, to the separately-published *State Emergency Operations Plan* that details other provisions, including the Emergency Management Assistance Compact, that may provide additional resources.

COUNTY PLANS Content:

Annex B, *Emergency Response Support and Resources*, details the Federal and State Resources supporting the planned response.

Procedures 1 through 15 detail the agencies expected to respond to emergencies and detail their responsibilities. Appropriate letters of agreement are attached to the plans.

D. Emergency Classification System Planning Standard: *A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.*

D.1 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

D.2 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

D.3 Evaluation Criterion: *Each State and local organization shall establish an emergency classification and emergency action level scheme consistent with that established by the facility licensee.*

D.3 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Licensee, in coordination with State and local response organizations, has developed and maintains comprehensive emergency classification and emergency action level system. These ECLs and EALs are incorporated in the state plan. The county plans, relying upon the State for emergency classification level determinations, detail the response required at each level.

D.4 References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 2, pages 2-1 through 2-7, *Emergency Conditions Classification System*
- Attachment 1 to Appendix 2, *Emergency Action Levels Callaway Nuclear Plant*

COUNTY PLANS References:

- Appendix 3
- * Procedures 1 through 15

D.4 Plan Content:

MONAP Plan Content:

Appendix 2, pages 2-1 through 2-7, detail the emergency classification system,

the emergency conditions classifications and the emergency action levels applicable to the Callaway plant.

Attachment 1 to Appendix 2 provides details of the EALs for Callaway.

COUNTY PLANS Content:

The county plans rely upon input from the State and utility for determination of the appropriate emergency classification levels. Appendix 3 of the county plans cross-references the plans' implementing procedures while Procedures 1-15 inclusive detail the duties and responsibilities of the county response organization at each level.

E. Notification Methods and Procedures Planning Standard: *Procedures have been established for notification, by the licensee of State and local response organizations and for notification of emergency personnel by all response organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.*

E.1 Evaluation Criterion: *Each organization shall establish procedures which describe mutually agreeable bases for notification of response organizations consistent with the emergency classification and action level scheme set forth in Appendix 1. These procedures shall include means for verification of messages. The specific details of verification need not be included in the plan.*

E.1 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Both the State and county plans are complete in describing and placing responsibility for the notification of response organizations at each emergency classification and action level.

E.1 References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP Plan References:

- Appendix 3, *Notification Procedures*

COUNTY PLANS References:

- Annex C, *Emergency Classification System And Associated County Response Activities*, Part II
- Annex D, *Notification Methods and Procedures*, Part II, Sections A and B
- Annex D, Attachments 1, *Sentry System and Backup Radio System*
- Annex D, unlabeled attachment, *Backup to Sentry System*

E.1 Plan Contents:

MONAP Contents:

Appendix C details the unusual event, alert, site emergency, and general emergency classifications at Callaway Plant. This appendix sets out the means by which State and local organizations are notified using the SENTRY dedicated communications system, the backup radio system and commercial telephone notification. It specifies personnel, by agency and name, to be contacted and

provides contact information for each. It requires that messages be confirmed by callback to the issuing authority.

COUNTY PLANS References:

Annex C lays out each classification level and the appropriate activities to be undertaken at each level. The procedures by which notifications are to be made and received are described, and the operation of the SENTRY communications system and backup radio system are described.

E.2 Evaluation Criterion: *Each organization shall establish procedures for alerting, notifying, and mobilizing emergency response personnel.*

E.2 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Procedures for alerting, notifying and mobilizing emergency response personnel are adequately described by both the State and county plans.

E.2 Plan References: (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 3, *Notification Procedures*

COUNTY PLANS References:

- Annex D: Part I, Sections D and E
- Annex D, Part II, Section A, subsections 1 and 2
- Annex D, Part II, Section B, subsection 1

E.2 Plan Contents:

MONAP Contents:

Appendix C details the means by which State and local organizations are notified using the SENTRY dedicated communications system, the backup radio system and commercial telephone notification. It specifies personnel, by agency and name, to be contacted and provides contact information for each.

COUNTY PLANS Contents:

The responsibilities of county and local response organizations are detailed in Sections D and E of Annex D, Part I.

Annex D, Part II, Sections C and D, provide, “When ordered by the Commissioner, the Emergency Communication Center (ECC) Dispatcher will proceed to activate the emergency response agencies by continuing down the emergency call list.”

The cited sections further state, “Emergency response agencies will initiate their own emergency notification procedures and call lists to mobilize personnel and equipment and to activate emergency stations to which response personnel will report. Emergency personnel will assemble equipment and supplies, report to designated emergency stations, and await dispatch to assigned duties. Emergency response agencies will monitor the mobilization and report readiness status to the County EOC.”

Section B of this Annex and Part provides specific instructions for use in the event the primary notification system is not operable.

- E. 3** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- E.4** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- E.5** **Evaluation Criterion:** *State and local government organizations shall establish a system for disseminating to the public appropriate information contained in initial and followup messages received from the licensee including the appropriate notification to appropriate broadcast media, e.g., the Emergency Broadcast System (EBS).*

E. 5 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Systems for disseminating to the public appropriate information in initial and followup messages are documented in the State and county plans.

E.5 Plan References: (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * Annex A, *State Emergency Management Agency Standard Operating Procedures*, Part I, Section D
- * Attachment 3 to Annex A, checklist items 4, 6 and 10
- Attachment 1 to Appendix 3, *The Callaway Plant And Cooper Nuclear Station Alert Systems For Specific Population Segments*
- * Appendix 4, *Warning To Public, Callaway Plant Site Area Or General*

Emergency

- Annex C, Part IV, Sections A, B, C and D
- Annex C, pages C-5 to C-6.12

COUNTY PLANS References:

- *Basic Plan*, Part V, Section B, subsection 8
- Procedure 6, *Public Alert/Protective Action Instructions*

E.5 Plan Contents:

MONAP Contents:

Annex A, Part I, Section D places responsibility for the activation of the alert and notification with SEMA.

Attach 3, Annex A, checklist details specific steps to be undertaken to access KTXY, the primary EAS radio station.

Attachment 1 to Appendix 3 specifies systems to be used for alerting the public.

Appendix 4 provides specific guidance for public alerting/notification at the Site Area and General Emergency classifications.

Annex C contains description of the EAS, the EAS station identification, means by which messages are to be authenticated, and steps in EAS implementation.

Pages C-5 through C-6.12 contain EAS messages and draft emergency information messages.

COUNTY PLANS Contents:

The *Basic Plan*, Part V, Section B, subsection 8, states, Following coordination of this decision with other risk counties, the County will release the appropriate emergency message(s) to the State EOC for broadcast via the Emergency Alert System (EAS) to the risk population and then activate its Public Alert system.”

Procedure 6, *Public Alert/Protective Action Instructions*, details the public alerting and emergency public notification systems employed by the county, identifies responsible persons, and outline procedures to be employed.

- E.6 Evaluation Criterion:** *Each organization shall establish administrative and physical means, and the time required for notifying and providing prompt instructions to the public within the plume exposure pathway Emergency Planning Zone. (See Appendix 3.) It shall be the licensee's responsibility to demonstrate that such means exist, regardless of who implements this*

requirement. It shall be the responsibility of the State and local governments to activate such a system.

E.6 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The State of Missouri and the counties of Callaway, Montgomery, Osage and Gasconade have facilities and procedures in-place to provide prompt instructions to the public in the event of an incident at Callaway Nuclear Power Plant.

E.6 Plan References: (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 4, pages 4-2 through 4-8
- Appendix 5, pages 5-2 through 5-2.1
- Annex C

COUNTY PLANS References:

- * Annex D, Part I, Section D
- Annex D, Part III, Section A and B
- * Annex F, *Public Information and Education*, Part III

E.6 Plan Contents:

MONAP Contents:

Appendix 4 contains the EAS flowchart for notifications at the Site Area and General Emergency classification levels. Pages 5.2 through 5.2-1 delineate the communications capabilities of the State to support public alert and notification. Annex C describes the Public Information function, the role of the State PIO, use of the EAS system, contact with the media (including detailed listing of broadcast and print media contacts, Rumor Control instructions, draft media releases, and EPZ subarea descriptions and related Reception and Care Centers.

COUNTY PLANS Contents:

Annex D cites the responsibility of the State in activating the EAS system and details the processes and systems, including EAS and the Community Alert Network (reverse 911) system, used to notify the public. Annex F is a detailed description of the public information system.

E.7 Evaluation Criterion: *Each organization shall provide written messages intended for the public, consistent with the licensee's classification scheme. In particular, draft messages to the public giving instructions with regard to specific protective actions to be taken by occupants of affected areas shall be prepared and included as part of the State and local plans. Such messages should include the appropriate aspects of sheltering, ad hoc respiratory protection, e.g., handkerchief over mouth, thyroid blocking or evacuation.*

E.7 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Both the county and state plans contain written messages intended for the public. These messages provide specific guidance to the public on protective actions that should be taken, including sheltering, respiratory protection and evacuation.

E.7 Plan References: (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex C, *Public Information*, pages C-6 through C-38

COUNTY PLANS References:

- Supplement 2 to Procedure 6, *EAS Announcements and Draft News Releases*

E.7 Plan Content:

MONAP Content:

Annex C contains the preformatted written messages intended for the public, consistent with the Callaway's classification scheme. These messages contain the required information relating to the appropriate aspects of sheltering, ad hoc respiratory protection, and evacuation.

COUNTY PLANS Content:

Supplement 2 to Procedure 6 contains the draft EAS messages. As applicable, each contains appropriate protective action information.

Note: The State of Missouri does not issue Potassium Iodide for use by the general public and does not recommend KI ingestion by any population other than emergency workers and special needs persons (i.e., those incarcerated or unable to be evacuated such as those in nursing centers.)

F. Emergency Communications Planning Standard: *Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.*

F.1. Evaluation Criteria: *The communication plans for emergencies shall include organizational titles and alternates for both ends of the communication links. Each organization shall establish reliable primary and backup means of communication for licensees, local, and State response organizations. Such systems should be selected to be compatible with one another. Each plan shall include:*

F.1.a. Evaluation Criterion: *provision for 24-hour per day notification to and activation of the State/local emergency response network; and at a minimum, a telephone link and alternate, including 24-hour per day manning of communications links that initiate emergency response actions.*

F.1.a. Statement

The FEMA Review found the plans addressing this criterion to be adequate.

The primary means of contact between Callaway Nuclear Power Plant and the offsite response organization are the SENTRY system (a dedicated communications facility), a backup radio system and the Missouri State Highway Patrol dispatch facility for Troop F and the county emergency communications centers that are staffed on a 24-hour basis.

F.1.a. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 5, Sections 1, 2, 3 and 4

COUNTY PLANS References:

- Annex D, Part II, Sections A and B
- Annex E, Parts I through IV

F.1.a. Plan Contents:

MONAP Contents:

Appendix 5 details that Callaway Plant will make initial notification of an emergency to the State Emergency Management Agency, the Callaway, Gasconade, Montgomery, and Osage Counties Emergency Operations Centers by

utilizing the Sentry System (via fax modem) or the Back up Radio System. If SEMA does not respond when contacted over the Sentry System or the Back up Radio System, the Callaway Plant will notify the Missouri State Highway Patrol, Troop F. The Troop F dispatcher will verify the emergency by phone to the Callaway Plant using the call back number. The Troop F dispatcher will contact SEMA utilizing the emergency phone number (24 hours) and relay the emergency notification.

COUNTY PLANS Contents:

Annex D states that a special Sentry System and Back Up Radio System have been installed among the plant, State, and all four risk Counties. Callaway Plant will use this telephone system to provide immediate and simultaneous notification to the risk counties and the State, upon the occurrence of an incident of any classification level at the Callaway Plant. The Control Room Communicator also will provide initial notification to the Emergency Communications Center (ECC) of the Callaway County/Fulton Emergency Operations Center by commercial telephone with radio backup. The ECC is manned on a 24-hour per day basis.

Annex E states that the county ECCs are staffed on a 24-hour basis and provide the common point of contact for emergency communications. Callaway County's ECC is designated as the primary contact for communications from the facility.

F.1.b Evaluation Criterion: *provision for communications with contiguous State/local governments within the Emergency Planning Zones;*

F.1.b. Statement

The FEMA Review found the plans addressing this criterion to be adequate.

Adequate provisions are made for communications between the contiguous counties within the emergency planning zone. No State contiguous with Missouri is within the EPZ.

F.1.b. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * Attachment 5, Part III

COUNTY PLANS References:

- Annex E, Part IV

F.1.b. Plan Contents:

MONAP Contents:

Attachment 5, Part III states, “Communications between the SEOC and affected county EOCs, local governments and contiguous states shall be through: dedicated Multi-point Telephone (Notification/Communication Line), Public Switched (commercial) Telephone (primary), the Missouri Uniform Law Enforcement System (MULES)- (in-state) and Federal National Radio System (FNARS).”

COUNTY PLANS Content:

Annex E, Part IV, states “The primary means of communications among risk county EOCs will be by the Sentry System. Back Up Radio or telephone Inter-county communications will be between Commissioners or designees.”

F.1.c. Evaluation Criterion: *provision for communications as needed with Federal emergency response organizations;*

F.1.c. Statement

The FEMA Review found the plans addressing this criterion to be adequate.

Provisions are made for communications between the State and Federal government resources using telephone, NAWAS or FNARS or via FEMA Region VII. State communications with Federal resources is directed through SEMA.

F.1.c. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 5, Part IV

COUNTY PLANS References:

- Annex E, Part VI

F.1.c. Plan Contents:

MONAP Contents:

Appendix 5, Part IV, indicates that communications with federal agencies shall

be telephone (primary), National Warning System (NAWAS), or Federal National Radio System (FNARS). FEMA Region VII, Kansas City, shall be SEMA's point of contact with all federal agencies.

COUNTY PLANS Contents:

The county plans state, "Communications will be between the Commissioners in the EOC or designee and the SEMA Director or designee, who in turn will contact FEMA Region VII in Kansas City via commercial telephone, with NAWAS or Teletype backup."

F.1.d. Evaluation Criterion: *provision for communications between the nuclear facility and the licensee's near-site Emergency Operations Facility, State and local emergency operations centers, and radiological monitoring teams;*

F.1.d. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Provisions are made to ensure that communications pathways are open between the plant, its EOF, the technical support center (collocated with the EOF) and the county and state governments.

F.1.d. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 5, pages 5.2 – 5.4

COUNTY PLANS References:

- Annex E, Part II

F.1.d. Plan Content:

MONAP Content:

Appendix 5, Part V, states that communications between the Callaway Plant, to include the EOF, and state/local emergency response organizations shall by dedicated multi-point line to state and local communications centers. During an emergency, selected state and local officials may be located in the utility's Emergency Operations Facility. Field monitoring teams will be furnished VHF radios compatible with State field team coordinators and EOF.

COUNTY PLANS Content:

Annex E, Part II, states that the primary means of communications between the EOC and the Plant will be by the Sentry System. Should the primary means of communications fail or reach saturation, the backup means will be by commercial telephone or Back Up Radio.

F.1.e Evaluation Criterion: *provision for alerting or activating emergency personnel in each response organization*

F.1.e. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

State agency procedures provide for alerting and notification of response personnel. The counties rely, largely, upon their Emergency Communications Centers for alert and activation via their radio systems.

F.1.e. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

Annex A, *Standard Operating Procedures* for each agency

COUNTY PLANS References:

- Annex E, *Emergency Communications*, Part III

F.1.e. Plan Content:

MONAP Content:

Each Standard Operating Procedure in Annex A details the means used to contact that agency.

COUNTY PLANS Content:

Annex E, Part III, state that the primary means of communications between the EOC and local emergency response agencies will be by radio utilizing normal communications channels and frequencies. Should the primary means of communications fail or reach saturation, the backup means will be Back Up Radio System or telephone. Communications between County emergency response agencies and emergency personnel will be by radio utilizing normal communications channels and frequencies.

F.1.f. *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

F.2 **Evaluation Criterion:** *Each organization shall ensure that a coordinated communication link for fixed and mobile medical support facilities exists.*

F.2. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The State of Missouri relies upon commercial telephone networks with fixed medical facilities. The counties utilize their existing radio networks, primarily, for communication with emergency medical service agencies and personnel.

F.2. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 5, Part VII

COUNTY PLANS References:

- Annex E, *Emergency Communications*, Part III, Section D

F.2. Plan Content:

MONAP Content:

Appendix 5 states that communication between the SEOC and emergency medical (fixed and mobile) support facilities are provided by public switched telephone (primary) backed up by VHF Public Safety radio.

COUNTY PLANS Content:

Annex E states that communications between the County EOC and special facilities, such as schools, hospitals and nursing homes will be by commercial telephone. Communications between County emergency response agencies and emergency personnel, such as ambulances, will be by radio utilizing normal communications channels and frequencies.

F.3 **Evaluation Criterion:** *Each organization shall conduct periodic testing of the entire emergency communications system*

F.3 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The State of Missouri relies upon commercial telephone networks with fixed medical facilities. The counties utilize their existing radio networks, primarily, for communication with emergency medical service agencies and personnel.

F.3 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 5, Part VIII

COUNTY PLANS References:

- Annex E, *Emergency Communications*, Part III, Section D

F.2. Plan Content:

MONAP Content:

Appendix 5, Part VIII, states that complete testing of radio and/or phone links between the utility, state EOC, Forward Command Post, local emergency operations centers, and monitoring teams shall be accomplished annually during an exercise. Operational checks of dedicated phone lines and/or radio links between utility and local emergency communications centers shall be monthly. Communications between state and federal agencies shall be tested quarterly.

COUNTY PLANS Content:

In Annex E, Part VIII, the county plans state that communications equipment to be used in an emergency will be tested as follows: All emergency communications equipment that is not in regular use will be inspected and inventoried on a quarterly basis and after emergency use. All emergency communications equipment that is not in daily use will be operationally checked on a quarterly basis. Communication links with Callaway Plant and other risk counties will be tested monthly. Communications with other risk county, State and Plant emergency-operating centers will be tested annually.

G. Public Education and Information Planning Standard: *Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.*

G.1 Evaluation Criterion: *Each organization shall provide a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. This information shall include, but not necessarily be limited to: educational information on radiation; contact for additional information; protective measures, e.g., evacuation routes and relocation centers, sheltering, respiratory protection, radioprotective drugs; and special needs of the handicapped. Means for accomplishing this dissemination may include, but are not necessarily limited to: information in the telephone book; periodic information in utility bills; posting in public areas; and publications distributed on an annual basis.*

G.1 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The State of Missouri, the risk counties and the licensee work together on an ongoing basis to provide public information programs meeting the requirements of this criterion.

G.1 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex C, *Public Information*, Part III

COUNTY PLANS References:

- Annex F, *Public Education and Information*, Part II

G.1 Plan Contents:

MONAP Contents:

Annex C, Part III, states, “A least once a year, SEMA, in cooperation with officials from Ameren/UE and NE Public Power District, shall conduct public

meetings. These meetings shall be designed to provide members of the news media with general educational information on nuclear radiation and its health hazards as it pertains to nuclear power generation facilities. Such information includes safety measures, educational information on radiation, contacts for additional information, respiratory protection, sheltering, evacuation routes, and other items of interest regarding "what to do" in the event of an emergency. These meetings also address the special informational needs of the agricultural community, and the handicapped. Information of the same type is also developed in public information materials to be disseminated to residents and businesses within the ten-mile EPZ and made available to the public at several locations. These include motels, police departments, libraries, tourist information centers, post offices, restaurants, city halls, courthouses, etc. In addition, periodic dissemination of such information shall be made through local media."

COUNTY PLANS Contents:

Annex F details a program paralleling that of the State and including development and distribution of brochures and calendars, conducting public meetings, placing information materials in public accommodations and conducting media briefings. The materials define/explain notification procedures and levels, provide instructions for taking protective actions, contain an explanation of radiation and its risks, list contact points for additional information, and provide information for persons with special needs.

- G.2 Evaluation Criterion:** *The public information program shall provide the permanent and transient adult population within the plume exposure EPZ an adequate opportunity to become aware of the information annually. The programs should include provision for written material that is likely to be available in a residence during an emergency. Updated information shall be disseminated at least annually. Signs or other measures (e.g., decals, posted notices or other means, placed in hotels, motels, gasoline stations and phone booths) shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an emergency or accident occurs. Such notices should refer the transient to the telephone directory or other source of local emergency information and guide the visitor to appropriate radio and television frequencies.*

G.2 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

A robust public information program, including annually-reviewed written materials and signage, targeting both resident and transient populations is provided for and in-place within the plume exposure EPZ surrounding Callaway plant.

G.2 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex C, *Public Information*, Part III

COUNTY PLANS References:

- Annex F, *Public Education and Information*, Part II

G.2 Plan Contents:

MONAP Contents:

Annex C, Part III, states (in part), “Public information materials (are) disseminated to residents and businesses within the ten-mile EPZ and made available to the public at several locations. These include motels, police departments, libraries, tourist information centers, post offices, restaurants, city halls, courthouses, etc. In addition, periodic dissemination of such information shall be made through local media.”

Through review and observation it is confirmed that a variety of public information materials have been developed and distributed to appropriate locations throughout the EPZ. These materials have been prepared through a joint effort with State and local authorities and are updated as appropriate. These materials include: public information materials distributed to each residence within the EPZ and placed in locations frequented by transient populations; information placed in high visibility publications such as local newspapers; informational signs posted in areas frequented by transient populations such as the Reform Wildlife Management Area and Missouri River Accesses; and information booklets distributed with Tone Alert Radios that are provided for all residents of the EPZ. At least annually, Callaway Plant, in conjunction with state and local authorities, reviews and updates the public information material and distributes it to individuals residing in the Plume Exposure Pathway EPZ.

COUNTY PLANS Contents:

Annex F details a program paralleling that of the State and including development and distribution of brochures and calendars, conducting public meetings, placing information materials in public accommodations and conducting media briefings. The materials define/explain notification procedures and levels, provide instructions for taking protective actions, contain an explanation of radiation and its risks, list contact points for additional information, and provide information for persons with special needs.

G.3.a Evaluation Criterion: *Each principal organization shall designate the points of contact and physical locations for use by news media during an emergency.*

G.3.a. Statement

The FEMA review found the plans addressing this criterion to be adequate.

Both the State and county plans designate the Public Information Officer, located at the Ike Skelton Training Center, Jefferson City, as the media point of contact and location from which the press will operate.

G.3.a. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex C, *Public Information*, Part II

COUNTY PLANS References

- Annex F, *Public Education and Information*, Part III, Section A
- Supplement 1 to Procedure 1 *et seq*

G.3.a. Plan Content:

MONAP Content:

Annex F, *Public Education and Information*, Part III, Section A, states, “The Joint Public Information Center for the Callaway Plant is located at SEMA, Ike Skelton Training Site, 2302 Militia Drive, Jefferson City, Missouri in the State Emergency Operations Center” and “The state spokesperson at the JPIC shall be the Governor's Press Secretary, or another person designated by the Governor.”

COUNTY PLANS Content:

Annex F, *Public Education and Information*, Part III, Section A, states, “The PIO is the official spokesperson for the County and has access to all necessary information” and “At all stages in the process, Public Information Officers of the affected jurisdictions will exchange and coordinate information prior to release to the news media.”

G.3.b *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

G.4.a Evaluation Criterion: *Each principal organization shall designate a spokesperson who should have access to all necessary information.*

G.4.a. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The State and county Public Information Officers (PIOs) are designated as the spokespersons having access to all necessary information.

G.4.a. References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex C, *Public Information*, Part II

COUNTY PLANS References

- Annex F, *Public Education and Information*, Part III, Section A
- * Supplement 1 to Procedure 1 *et seq*

G.4.a. Plan Content:

MONAP Content:

Annex F, *Public Education and Information*, Part III, Section A, states, “The state spokesperson at the JPIC shall be the Governor's Press Secretary, or another person designated by the Governor.”

COUNTY PLANS Content:

Annex F, *Public Education and Information*, Part III, Section A, states, “The PIO is the official spokesperson for the County and has access to all necessary information.”

G.4.b Evaluation Criterion: *Each organization shall establish arrangements for timely exchange of information among designated spokespersons.*

G.4.b. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Provisions are extant in both the State and county plans for the timely sharing of information between the county PIOs and the JPIC and between the spokespersons present at the JPIC.

G.4.b. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex C, *Public Information*, Part I

COUNTY PLANS References

- Annex F, Part III, *Public Information During An Emergency*

G.4.b. Plan Content:

MONAP Content:

Annex C, *Public Information*, Part I, outlines the general process to be involved in providing information to the press.

COUNTY PLANS Content:

Annex F, Part III, *Public Information During An Emergency*, places jurisdiction limitations on news releases and outlines the process to be followed in releasing information.

G.4.c Evaluation Criterion: *Each organization shall establish coordinated arrangements for dealing with rumors.*

G.4.c. Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Provisions are made for rumor control operations, equipment and training in the State plan, and county plans designate the State's rumor control operation as in support of county operations during an emergency.

G.4.c. Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex C, *Public Information*, Part IV

COUNTY PLANS References

- Annex F, Part III, Section C, *Rumor Control*

G.4.c. Plan Content:

MONAP Content:

Annex C, *Public Information*, Part IV, states “A Rumor Control Center will be established in the JPIC (Callaway), Jefferson City, Missouri, ... by the Director, SEMA, through the SEMA Public Information Officer. The Rumor Control Center will be activated at the Site Area Emergency classification level. The Rumor Control Center will operate with a rollover telephone system operating from a single rumor control number. The rumor control number will be publicized through the news media at the time the Rumor Control Center is activated. The Director, SEMA, will designate adequate numbers of staff persons for rumor control. The SEMA PIO will be responsible for training the rumor control staff concerning what information will be released to the public through the Rumor Control Center.”

COUNTY PLANS Content:

Annex F, Part III, Section C, *Rumor Control*, states “The State will publicize the telephone number of their rumor control office at the time of an incident. The rumor control staff will provide only that information which has been released as news releases or EAS messages. The State will provide rumor control telephone support for the County based upon information provided by the County.”

- G.5 Evaluation Criterion:** *Each organization shall conduct coordinated programs at least annually to acquaint news media with the emergency plans, information concerning radiation, and points of contact for release Licensee of public information in an emergency.*

G.5 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

State and county plans provide for annual programs to acquaint the media with plans, information, points of contact, and information concerning radiation.

G.5 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex C, *Public Information*, Part III

COUNTY PLANS References

- Annex F, Part I, Section B, *Responsibilities*

G.5 Plan Content:

MONAP Content:

Annex C, *Public Information*, Part III, states “At least once a year, SEMA, in cooperation with officials from Ameren/UE and NE Public Power District, shall conduct public meetings. These meetings shall be designed to provide members of the news media with general educational information on nuclear radiation and its health hazards as it pertains to nuclear power generation facilities. Such information includes safety measures, educational information on radiation, contacts for additional information, respiratory protection, sheltering, evacuation routes, and other items of interest regarding "what to do" in the event of an emergency. These meetings also address the special informational needs of the agricultural community, and the handicapped.”

COUNTY PLANS Content:

Annex F, Part I, Section B, *Responsibilities*, states the county will “participate in annual public meetings to educate the public and the news media.”

H. Emergency Facilities and Equipment Planning Standard: *Adequate emergency facilities and equipment to support the emergency response are provided and maintained.*

H.1 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

H.2 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

H.3 Evaluation Criterion: *Each organization shall establish an emergency operations center for use in directing and controlling response functions.*

H.3 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

The State of Missouri and the counties of Callaway, Gasconade, Montgomery and Osage have established, maintain and utilize emergency operations centers.

H.3 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Basic Plan*, Part III
- * Annex A, all Standard Operating Procedures

COUNTY PLANS References

- Annex G, Part I, Section B, subsections 1 and 2
- Annex A, Attachment 1

H.3 Plan Content:

MONAP Content:

Basic Plan, Part III, Section A, subsection 7, states “In the event of an emergency which presents or may present an off-site hazard to the public, the State Emergency Operations Center (SEOC) in Jefferson City will be activated in accordance with the State Emergency Operations Plan.”

The *Standard Operating Procedures* for agencies staffing the SEOC detail the responsibilities of each in supporting the center’s operation.

COUNTY PLANS Content:

Annex G, Part I, Section B of each plan states that the Emergency Operations Centers (EOC) are defined by location. The EOCs are capable of supporting 24-hour-per-day extended operations, and serve as the bases for the direction and control of County emergency operations. Communications support is provided by radio operators in the Emergency Communications Centers (ECC), which function as a part of the EOC.

Annex A, Attachment 1, provides an organizational chart for the County EOCs.

H.4. Evaluation Criterion: *Each organization shall provide for timely activation and staffing of the facilities and centers described in the plan.*

H.4 Statement:

The FEMA Review found the plans addressing this criterion to be adequate.

Sufficient staffing of the State's EOC and EOF/FCP facilities and the county's EOC operations are provided for in extant plans.

H.4 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Basic Plan*, Part III, Section A, subsections 6 and 7
- Annex A, *State Emergency Management Agency SOP*, page SEMA 6

COUNTY PLANS References

- Annex G, Part I, Section 3
- Annex A, Attachment 1
- * Annex G, Part I, Section 3
- Annex D, Part II, Section C, subsections 1 and 3
- * Supplement 3 to Procedure 3

H.4 Plan Content:

MONAP Content:

The *Basic Plan*, Part III, Section A, states (in part), "A forward command post (FCP) will be located in the plant Emergency Operations Facility (EOF) ... approximately one mile west for the Callaway plant. Representatives from the State Emergency Management Agency and Department of Health and Senior Services act as an operational staff. This staffing may be altered with respect to

the situation and the severity of the emergency. The respective counties involved may send a representative to the EOF/FCP to act as liaison with the state and utility ... In the event of an emergency which presents or may present an off-site hazard to the public, the SEOC in Jefferson City will be activated in accordance with the State Emergency Operations Plan.”

Annex A, State Emergency Management Agency Standard Operating Procedures, states, “the utility of an Alert classification or higher. Call-outs will be initiated according to notification procedures contained in Appendix 3 to the Basic Plan, where 24 hour telephone numbers of designated emergency personnel are contained. A call-out list of emergency personnel of each support state agency will be maintained by the SEMA Duty Officer. The SEMA Duty Officer will mobilize emergency personnel from the SEOC when a notification of Alert is made. During non-duty hours, the SEOC can be activated within 30 minutes after initiation of call-outs to emergency personnel. When the SEOC has been activated, state agency emergency representatives to the SEOC will mobilize support personnel and resources from their respective agencies as the situation requires and as requested by SEMA.”

COUNTY PLANS Content:

Annex G, Part I, Section 3 of the county plans provide for the staffing of the county EOC and its organization into operations, communications, clerical and support functions.

Annex A, Attachment 1, provides a diagram outlining the staffing assignments.

Annex D, Part II, Section C, subsections 1 and 3 provide for the notification and activation of emergency personnel staffing emergency facilities.

Supplement 3 to Procedure 3 contains the staff contact information for the organization.

H.5 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

H.6 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

H.7 **Evaluation Criterion:** *Each organization, where appropriate, shall provide for offsite radiological monitoring equipment in the vicinity of the nuclear facility.*

H.7 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Licensee’s *Callaway Plant Unit 2 Emergency Plan* Section H, 6 and 7, and Section I, 7, address offsite emergency monitoring around the Callaway plant.

Neither the State nor the counties maintain an installed base of monitoring equipment offsite.

H.7 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- N/A

COUNTY PLANS References

- N/A

H.7 Plan Content:

MONAP Content:

N/A

COUNTY PLANS Content:

N/A

H.8 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

H.9 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

H.10 **Evaluation Criterion:** *Each organization shall make provisions to inspect, inventory and operationally check emergency equipment/instruments at least once each calendar quarter and after each use. There shall be sufficient reserves of instruments/equipment to replace those which are removed from emergency kits for calibration or repair. Calibration of equipment shall be at intervals recommended by the supplier of the equipment.*

H.10 Statement

The FEMA review found the plans addressing this criterion to be adequate.

Provisions for the regular inventorying, calibrating and operational checking of radiological instruments are detailed in both the State and county plans.

H.10 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex D, Part III, Section D, subsection 3
- Attachment 1 to Annex D

COUNTY PLANS References

- Annex G, Part III, Sections A and C

H.10 Plan Content:

MONAP Content:

Annex D, Part III, Section D, subsection 3, states, “Radiological monitoring equipment for state agencies, organizations (fire departments outside of risk county area) and MoRET which will be used for accident assessment, decontamination sites, etc., are listed in Attachment 1 to this annex. Upon notification by the SEOC, equipment can be issued at that location or transported to an appropriate location for issue to emergency workers.”

“The custodian of all instruments shall inventory and operationally check instruments each calendar quarter before and after each use. Any instrument in need of repair shall be returned to the Maintenance and Calibration Office of SEMA for repair. Calibrations of these instruments are checked on an annual basis.”

“Direct reading dosimetry will be inspected for Electrical leakage and tested for accuracy by SEMA personnel on an annual basis.”

Attachment 1 to Annex D provides the equipment inventory in each monitoring kit. The inventories, operational checks and calibration dates of instruments are reported annually in the Annual Letters of Certification (on file).

COUNTY PLANS Content:

Annex G, Part III, Sections A and C, provide, “Radiological equipment for use by County and State emergency workers is provided by SEMA. Most of it is stored in the EOC, but some is issued to response units (e.g., fire departments) at the direction of the Emergency Management Director. The Emergency Management Director or his designee inspects, inventories, and operationally checks the equipment at least once each calendar quarter and after each use. The State calibrates the equipment at intervals recommended by the manufacturer. The State has sufficient reserves of equipment to replace those which are removed for calibration and repair. Dosimeters should be tested, initially, for accuracy. 0-5 R dosimeters or equivalent replaces old 0-200 mR dosimeters and are now calibrated and inspected for electrical leakage annually. Instruments used

for detecting contamination should be accompanied by a radioactive check source that can be used for an operational response check. This only applies to such locations as the Reception and Care Centers, emergency worker decontamination stations, the Fulton State Hospital, the Fulton Reception and Diagnostic Center, and other sites where the State performs monitoring.

Annex G, Part III, Section C, details the radiological instrument kit contents and the storage locations and inventories available at each site.

H.11 Evaluation Criterion: *Each plan shall, in an appendix, include identification of emergency kits by general category (protective equipment, communications equipment, radiological monitoring equipment and emergency supplies).*

H.11 Statement

The FEMA review found the plans addressing this criterion to be adequate.

Lists of protective equipment and emergency kits are detailed in both the State and county plans.

H.11 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *Department of Health and Senior Services Standard Operating Procedure*, Attachment 1
-

COUNTY PLANS References

- Appendix 2, *Emergency Equipment*, to the county plans

H.11 Plan Content:

MONAP Content:

Annex A, *Department of Health and Senior Services Standard Operating Procedure*, Attachment 1, lists the following:

Radiation Detection Instruments

Ludlum model 2241-3 survey instrument kit (Primary) 6

Each kit contains the following probes:

- (44-38) General-purpose probe with rotary beta shield
- (44-9) Thin window pancake probe
- (44-2) Sodium iodide probe

(133-7) High range probe

Ludlum model 14C survey instrument (Backup) 12

Includes a (44-6) general purpose probe with rotary beta shield
Each field teams will be dispatched with two Ludlum model 2241-3-survey instrument kits. A Ludlum model 14C and Canberra mini Radiac are available, if needed.

Dosimeters

DHSS has 30 Aero Tech DMC 2000 XB Electronic Dosimeters (E). SEMA provides DHSS with 30 CDV-725's (or equivalent) and CDV-742's direct reading dosimeters (DRD).

Supplies

An inventory of personal protect equipment, plume sampling, and ingestion pathway sampling supplies for each field team are available in the DHSS Field Team Manual.

Air Sampling Equipment and Supplies

1. Air Sampler (Low Volume-Portable Radeco H810DC or H809C).
Four (4) RADECO Model H809C and two (2) RADECO H810 air samplers are available; operates on 12V with jumper-cable type attachment.
2. Particulate filters.
3. Silver Zeolite cartridges (for drills and actual emergency).
4. Watch or stopwatch. (For H809-c air samplers only)

Instruments for Measuring Radioiodine Concentration

The Department of Health and Senior Services will sample for airborne radioiodine using a low volume air sample with a silver zeolite cartridge. Analysis of the cartridge will be performed using a Ludlum 2241-3 with a Pancake probe. The sensitivity of this method enables measurement of iodine concentrations as low as $1E-7$ microcuries/cubic centimeter.

TAB 4 and TAB 5 to Attachment 2 to Annex D provide the equipment and instrumentation supplies for decontamination facilities.

TAB 3 to Attachment 3 to Annex D lists of the protective equipment and instrumentation supplies for vehicle decontamination.

Attachment 1 to Annex G lists the instrumentation and supplies available at the University of Missouri Research Reactor laboratory.

COUNTY PLANS Content:

- H.12 Evaluation Criterion: *Each organization shall establish a central point (preferably associated with the licensee's near-site Emergency Operations***

Facility), for the receipt and analysis of all field monitoring data and coordination of sample media.

H.12 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The State plan provides for the University of Missouri Research Reactor laboratory to be the central point for the receipt and analysis of monitoring data.

H.12 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex G, Part III, Section C

COUNTY PLANS References

- Annex H, Part I, Section B, subsections 1 and 2

H.12 Plan Content:

MONAP Content:

Annex G, Part III, Section C, states, “Samples will be delivered to a pickup point determined by SEMA. The samples will then be transported to the University of Missouri Research Reactor (MURR), or the EPA laboratory, National Air and Radiation Environmental Laboratory (NAREL).

COUNTY PLANS Content:

Annex H, Part I, Section B, subsections 1 and 2, state, “The County does not have the capability of performing field radiological monitoring and sampling in support of accident assessment. It can only support self-protection monitoring for its emergency workers. 2. Radiological monitoring and sampling and assessment of radiological data will be performed by Callaway Plant, the State and Federal agencies.”

- I. Accident Assessment Planning Standard: Adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.**
- I.1** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- I.2** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- I.3** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- I.4** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- I.5** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- I.6** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- I.7** **Evaluation Criterion: Each organization shall describe the capability and resources for field monitoring within the plume exposure Emergency Planning Zone which are an intrinsic part of the concept of operations for the facility.**

I.7 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The capabilities and resources for field team monitoring are described in Annex A, *Department of Health and Senior Services Standard Operating Procedures*. The Counties do not have a responsibility for field team monitoring activities; this is exclusively a State responsibility in Missouri.

I.7 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *Department of Health and Senior Services Standard Operating Procedures, Part II, Concept of Operations*

COUNTY PLANS References

- N/A

I.7 Plan Content:

MONAP Content:

Annex A, *Department of Health and Senior Services Standard Operating Procedures*, Part II, *Concept of Operations* contains a detailed description of the State's capabilities for field team monitoring within the plume Emergency Planning Zone.

Section C, subsection 1, specifically states, "At least two field monitoring teams will be dispatched as necessary, but not later than at the declaration of a Site Area Emergency classification. Each team will consist of at least two (2) persons and will be deployed in an effort to characterize the plume. Field teams are made up from DHSS and other designated personnel (DNR, Ag, MoRET, etc., and are responsible for monitoring, sampling and communications with the EOF. If required additional transportation and communications equipment will be provided to each team by SEMA. The DHSS representative will be experienced in the use of monitoring equipment and will have received emergency response training. The field monitoring equipment and appropriate protective equipment will be provided to each team by DHSS."

COUNTY PLANS Content:

N/A

- I.8** **Evaluation Criterion:** *Each organization, where appropriate, shall provide methods, equipment and expertise to make rapid assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways. This shall include activation, notification means, field team composition, transportation, communication, monitoring equipment and estimated deployment times.*

I.8 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The methods, equipment and expertise required for making assessment of the actual or potential magnitude and locations of radiological hazards are described in Annex A, *Department of Health and Senior Services Standard Operating Procedures* and in Annex G, *Environmental Sampling and Analysis*. The Counties do not have a responsibility for assessment activities; this is exclusively a State responsibility in Missouri.

I.8 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *Department of Health and Senior Services Standard Operating Procedures, Part II, Concept of Operations*

COUNTY PLANS References

- N/A

I.8 Plan Content:

MONAP Content:

Annex A, Department of Health and Senior Services Standard Operating Procedures, Part II, Concept of Operations contains a detailed description of the State's capabilities for field team monitoring within the plume Emergency Planning Zone.

Section C, subsection 1, specifically states, "At least two field monitoring teams will be dispatched as necessary, but not later than at the declaration of a Site Area Emergency classification. Each team will consist of at least two (2) persons and will be deployed in an effort to characterize the plume. Field teams are made up from DHSS and other designated personnel (DNR, Ag, MoRET, etc., and are responsible for monitoring, sampling and communications with the EOF. If required additional transportation and communications equipment will be provided to each team by SEMA. The DHSS representative will be experienced in the use of monitoring equipment and will have received emergency response training. The field monitoring equipment and appropriate protective equipment will be provided to each team by DHSS."

Annex G, Environmental Sampling and Analysis, states, "Sample collection is broken down into two phases: the plume phase, and the ingestion pathway or intermediate phase. DHSS standard sample collection procedures will be used to collect samples."

"Plume exposure pathway sampling is done in the 0-10 mile EPZ. The DHSS will collect air samples in the plume exposure EPZ during the emergency phase to determine or verify the severity of the accident. Other media (soil, water, vegetation) may be collected by DHSS field teams in specific instances. DHSS field teams may be augmented by MoRET."

“Ingestion pathway or intermediate phase sampling is done in the 0-50 mile IPZ. During this phase, environmental samples are collected in the IPZ and analyzed to establish exclusion areas, relocate populations from within exclusion areas and return evacuees up to exclusion area boundaries. Additionally, a determination is made whether to embargo crops, restrict milk from entering the food supply and restrict the use of contaminated water. Since concerns about radionuclides getting into the food chain are an important consideration in the recovery process, several state and federal agencies will be involved in sample collection. State agencies and their primary area of sample collection are as follows:

Department of Natural Resources - public drinking water (wells, reservoirs, etc.)
Department of Agriculture - raw crops, products at food processors, feed, milk, etc.
Department of Conservation - wild game, fish and birds, etc. “

“DHSS will determine locations where samples are to be collected. Standardized sample collection procedures will be used. Samples will be delivered to a pickup point determined by SEMA. The samples will then be transported to the University of Missouri Research Reactor (MURR), or the EPA laboratory, National Air and Radiation Environmental Laboratory (NAREL).”

“Collected samples will be transported for analysis by the most expeditious means available, i.e., collecting agency, State Highway Patrol, National Guard, etc. Persons (or agency) providing transport for collected samples will maintain the Chain-of-Custody form (Attachment 3) assuring that all appropriate receiving/relinquishing signatures are applied, and assuring that the form stays with the identified samples. The Chain-of-Custody form will be initiated by the person (or team leader) collecting the samples.”

SEMA, at the request of MURR, will provide temporary facilities to MURR for storage of samples collected for radiochemical analysis.”

“Primary communications will be by telephone with radio as a secondary means of communication. If radios that belong to the state agencies cannot be set on the SEMA frequency, SEMA will issue radios to the sample collection teams.”

“Supplies for sample collection will be issued by SEMA or DHSS to sample collection teams when they are dispatched to collect samples in the IPZ. “

“Analysis data from samples collected during the plume phase will be transmitted by telephone or faxed to DHSS personnel at the EOF. “

“Analysis data from samples collected during the ingestion pathway phase will be transmitted by telephone or faxed to DHSS personnel at the SEOC.”

COUNTY PLANS Content:

N/A

- I.9 Evaluation Criterion:** *Each organization shall have a capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as 10⁻⁷ uCi/cc (microcuries per cubic centimeter) under field conditions. Interference from the presence of noble gas and background radiation shall not decrease the stated minimum detectable activity.*

I.9 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The equipment employed by the State's Department of Health and Senior Services can measure concentrations of radioiodine as low 1E-7 microcuries/cubic centimeter.

I.9 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * Annex A, *Department of Health and Senior Services Standard Operating Procedures*, Attachment 1

COUNTY PLANS References

- N/A

I.9 Plan Content:

MONAP Content:

Annex A, Department of Health and Senior Services Standard Operating Procedures, Attachment 1 in the subsection titled Instruments for Measuring Radioiodine Concentration states "The Department of Health and Senior Services will sample for airborne radioiodine using a low volume air sample with a silver zeolite cartridge. Analysis of the cartridge will be performed using a Ludlum 2241-3 with a Pancake probe. The sensitivity of this method enables measurement of iodine concentrations as low as 1E-7 microcuries/cubic centimeter."

COUNTY PLANS Content:

N/A

I.10 Evaluation Criterion: *Each organization shall establish means for relating the various measured parameters (e.g., contamination levels, water and air activity levels) to dose rates for key isotopes (i.e., those given in Table 3, page 18) and gross radioactivity measurements. Provisions shall be made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides. The detailed provisions shall be described in separate procedures.*

I.10 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Means for relating the various measured parameters to dose rates for key isotopes and gross radioactivity measurements are described in detail in Annex B of the *Missouri Nuclear Accident Plan*. Provisions are made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides.

I.10 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * Annex B, *State Protective Action Guidelines*

COUNTY PLANS References

- N/A

I.10 Plan Content:

MONAP Content:

Annex B, *State Protective Action Guidelines*, contains detailed information, including worksheets and PAG references, to be used in relating the various measured parameters to dose rates for key isotopes and gross radioactivity measurements, for estimating integrated dose from the projected and actual dose rates, and for comparing these estimates with the protective action guides.

COUNTY PLANS Content:

N/A

I.11 Evaluation Criterion: *Arrangements to locate and track the airborne radioactive plume shall be made, using either or both Federal and State*

resources.

I.11 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The Department of Energy's Federal Radiological Monitoring and Assessment Center is identified as the resource responsible for locating and tracking the airborne radioactive plume.

I.11 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * Annex H, *Federal and Volunteer Agencies and Responsibilities*

COUNTY PLANS References

- N/A

I.11 Plan Content:

MONAP Content:

Annex H, *Federal and Volunteer Agencies and Responsibilities*, identifies FRMAC as the resource to be used in locating and tracking the airborne radioactive plume. The State will coordinate with FRMAC in providing information/data obtained through monitoring and sampling activities.

J. Protective Response Planning Standard: *A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.*

J.1 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

J.2. Evaluation Criterion: *Each licensee shall make provisions for evacuation routes and transportation for onsite individuals to some suitable offsite location, including alternatives for inclement weather, high traffic density and specific radiological conditions.*

J.2 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The State *Basic Plan* identifies the Counties as having responsibility for the identification of routes and evacuation of persons within areas affected by an incident at Callaway. Evacuation routes are established within the county plans. The licensee's *Emergency Plan*, Section J.1, provides for the orderly evacuation of on-site personnel to their homes or reception and care facilities using these routes.

J.2 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Basic Plan*, Part III, Section A, subsection 10

COUNTY PLANS References

- * Attachment 6 to Annex I, *Primary Evacuation Routes*

J.2 Plan Content:

MONAP Content:

The *Basic Plan*, Part III, Section A, subsection 10, states, "Evacuation of the population from areas of suspected contamination is the responsibility of the local governments. Usually the order to evacuate will come from the County Commission based upon recommendations of the GAR and the Department of Health and Senior Services (DHSS). County emergency plans for nuclear power

plant accidents have been developed by local authorities. Such plans address evacuation of population living within a ten-mile radius of the plant. Detailed information regarding routes, population distribution, Reception and Care Centers, etc., can be found in appropriate county plans.”

COUNTY PLANS Content:

Attachment 6 to Annex I, Primary Evacuation Routes, identifies the evacuation routes to be used in evacuation from areas within each County’s jurisdictions.

- J.3** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- J.4** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- J.5** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- J.6** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- J.7** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- J.8** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- J.9** **Evaluation Criterion:** *Each State and local organization shall establish a capability for implementing protective measures based upon protective action guides and other criteria. This shall be consistent with the recommendations of EPA regarding exposure resulting from passage of radioactive airborne plumes, (EPA-520/1-75-001) and with those of DHEW (DHHS)/FDA regarding radioactive contamination of human food and animal feeds as published in the Federal Register of December 15, 1978 (43 FR 58790).*

J.9 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Both the State and county plans provide details of the capability to implement protective actions based upon protective action guidelines consistent with current Federal guidance.

J.9 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex B, *State Protective Action Guidelines*

COUNTY PLANS References

- Annex I, *Protective Actions for the General Public*

J.9 Plan Content:

MONAP Content:

The *Basic Plan*, Part I, Section A, subsections 24 and 24, note “Protective Action - Any action designed to vary all or part of the radiation dose that a potentially affected population group would otherwise receive. The protective actions considered appropriate by the Federal Environmental Protection Agency include evacuation, sheltering, prophylaxis, respiratory protection and control of access.”

“Protective Action Guide (PAG) - The projected dose to an individual from an unplanned release of radioactive material at which specific protective action to reduce or avoid that dose is recommended.”

Annex B, *State Protective Action Guidelines*, provides detail of the State’s development of Protective Action Guidelines. Part III of the annex outlines the protective actions associated with each PAG.

COUNTY PLANS Content:

Annex I, *Protective Actions for the General Public* details the responsibilities for protective decision making, the State protective action guidelines, protective action options, constraints on decision-making, and the decision-making processes.

Attachment 1 to Annex I provides a guideline for decision-making.

- J.10.a Evaluation Criterion:** *The organization's plans to implement protective measures for the plume exposure pathway shall include: a. Maps showing evacuation routes, evacuation areas, preselected radiological sampling and monitoring points, relocation centers in host areas, and shelter areas;*

J.10.a Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Evacuation routes, sheltering and care operations, and monitoring and decontamination location operations are county responsibilities. As a consequence, the required maps all are contained with the county plans. No State maps are provided.

J.10.a Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- N/A

COUNTY PLANS References

- Attachment 2 to Annex I, Emergency Planning Zone Boundary Map
- Enclosure 1 to Annex I, TAB 5, *Hearnes Multi-purose Building Reception and Care Center Map*
- Enclosure 2 to Annex I, TAB 5, *Jason Hall and Soldier's Hall Reception and Care Center Map*
- Enclosure 3 to Annex I, TAB 5, *Hermann Middle School Reception and Care Center Map*
- Enclosure 4 to Annex I, TAB 6, *Montgomery County R-II High School Reception and Care Center Map*
- Supplement 1 to Procedure 5, *Primary Evacuation Route Map*

J.10.a Plan Content:

MONAP Content:

- N/A

COUNTY PLANS Content:

- Required maps are provided at the locations above referenced.

J.10.b Evaluation Criterion: *Maps showing population distribution around the nuclear facility. This shall be by evacuation areas (licensees shall also present the information in a sector format);*

J.10.b Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Part 5: *Evacuation Time Estimate*, as provided in the application contains, at Figure 1.0-11, a population distribution map. This map, in large format, is published separately and is maintained and displayed within the County emergency operations centers and the State Emergency Operations Center.

J.10.b Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- See above

COUNTY PLANS References

- Attachment 3 to Annex I
- See above

J.10.b Plan Content:

MONAP Content:

- N/A

COUNTY PLANS Content:

Attachment 3 to Annex I, Summary of Evacuation Time Estimates, contains population data per subarea for the Emergency Planning Zone.

J.10.c Evaluation Criterion: *Means for notifying all segments of the transient and resident population;*

J.10.c Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The State and county plans detail systems of notifying all segments of the population, both resident and transient. Included in the system are the Emergency Alert System, tone alert radio system, Community Alert Network system and use of the news media.

J.10.c Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Appendix 3, *The Callaway Plant And Cooper Nuclear Station Alert Systems For Specific Population Segments*
- Appendix 4, *Public Warning Procedures - Callaway Plant*

COUNTY PLANS References

- Annex D, Part III, *Emergency Instructions to the Public*
- Annex F Part III, *Public Information and Education*

J.10.c Plan Content:

MONAP Content:

Attachment 1 to Appendix 3 lists the means for notifying populations at home, at work and in transit.

Appendix 4, *Public Warning Procedures*, provides detail on the warning systems employed in the Callaway Emergency Planning Zone.

COUNTY PLANS Content:

Annex D, Part III, *Emergency Instructions to the Public*, Section A states, “The Public Alert System is composed of sirens and tone alert radio receivers covering the entire plume exposure pathway EPZ. Generally, tone alert receivers are utilized for coverage of sparsely populated areas, to augment coverage of special facilities, and to notify Day Care Homes; however, deaf people living anywhere within the plume exposure pathway EPZ are provided with a tone alert radio and a special, load-switching, electrical attachment for it which will turn on a lamp whenever the radio is activated.”

Annex D, Part III, Section B, subsection 1, states, “The primary means of disseminating protective action recommendations and instructional messages to the public within the plume exposure pathway EPZ is through EAS.”

Annex F, Part III, Public Information During an Emergency, discusses message processing and the use of news releases.

J.10.d Evaluation Criterion: *Means for protecting those persons whose mobility may be impaired due to such factors as institutional or other confinement;*

J.10.d Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The State’s Department of Social Welfare maintains a current listing of disabled or handicapped persons who are within the EPZ. This listing is provided to the counties. The counties, in turn, arrange for the pre-identification, notification and transportation, as required, of these special needs persons.

J.10.d Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- The *Basic Plan*, Part III, Section A, subsection 16

COUNTY PLANS References

- Annex I, *Transportation*, Part I, Section A, subsection 2
- Annex I, *Transportation*, Part I, Section C
- Annex I, *Transportation*, Part II

J.10.d Plan Content:

MONAP Content:

The *Basic Plan*, Part III, Section A, subsection 16, states, “There are three state facilities in the 10 mile EPZ of Callaway Nuclear Plant.”

“a. Fulton Reception and Diagnostic Center (FRDC) houses approximately eleven hundred population in seven separate housing units and the Cremer Therapeutic Community Center (CTCC) houses one hundred and eighty residents with thirty to forty staff members in one building. Notification of the emergency situation will be received from the Callaway County/Fulton EOC. The Department of STATE NUCLEAR PLAN 13 JANUARY 2008 Corrections, Division of Classification and Treatment has determined that the preferred method of protecting the inmate population and staff during the Emergency Phase of a radiological emergency is sheltering. Procedures for sheltering are delineated in the FRDC Emergency Plan. Subsequent to the plume phase of an emergency, in the event that exposure to inmates and staff from ground deposition would make long-term sheltering inappropriate, relocation of the facility population to other such state facilities may be considered.”

“b. Fulton State Hospital (FSH) houses approximately five hundred fifty residents. Notification of a radiological emergency at the Callaway Nuclear Power Plant will be received from the Callaway/Fulton EOC. The Department of Mental Health has determined that the preferred method of protecting the residents during the Emergency Phase of a radiological emergency is sheltering. Procedures for sheltering are delineated in the FSH Emergency Plan. Subsequent to the plume phase of the emergency, in the event that exposure to inmates and staff from ground deposition would make long-term sheltering inappropriate, relocation of the facility population to other such state facilities may be considered.”

“c. Missouri School for the Deaf houses approximately 175 students and 203 staff in grades K-12. Notification of the emergency situation will come from the Callaway County/Fulton EOC. The school will implement which ever protective action that is recommended by the Callaway County Commission (shelter or evacuation).”

The *Basic Plan*, Part III, Section B, subsection 11, provides that the Department of Social Services will maintain a current list of disabled persons within the EPZ.

COUNTY PLANS Content:

Annex I, *Transportation*, Part I, Section A, subsection 2, provides that the Emergency Management Director in each county will “maintain a current list of persons who have special transportation requirements (e.g. incapacitated persons at their place of residence).”

Annex I, *Transportation*, Part I, Section C, provides that the Ambulance coordinator will “Coordinate and dispatch ambulances required to support County emergency response, including ambulances to support special facility relocation.”

Annex I, *Transportation*, Part II, states (in part),

“B. Institutionalized Persons

1. Prior to an emergency, other institutions (e.g., nursing homes and other residential care facilities, preschools, and day care centers) make their transportation requirements known to the Emergency Management Director who augments transportation for them.”

“2. During an emergency, the Transportation Officer contacts the institutions in order to determine and support transportation needs beyond their capability to provide.”

“C. Incapacitated Persons

1. Special transportation arrangements are made for incapacitated persons without means of transportation living at home, (e.g., those confined to beds, wheelchairs, or having severely limited mobility).”

“2. Prior to an emergency, lists of such persons are developed:

a. By the return of the special transportation request card included in the public information materials”.

“b. Through contact with medical facilities and community social service agencies.”

“3. The Transportation Officer ensures that such persons are contacted, and that their special transportation needs are satisfied during the emergency.”

J.10.e Evaluation Criterion: *Provisions for the use of radioprotective drugs, particularly for emergency workers and institutionalized persons within the plume exposure EPZ whose immediate evacuation may be infeasible or very difficult, including quantities, storage, and means of distribution.*

J.10.e Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Radioprotective drugs, specifically Potassium Iodide (KI), are not recommended for ingestion by nor issued to the general public in the State of Missouri. Provisions for the use of radioprotective drugs, particularly for emergency workers and institutionalized persons within the plume exposure EPZ whose immediate evacuation may be infeasible or very difficult, including quantities, storage, and means of distribution.

J.10.e Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex B, *State Protective Action Guides*, Part IX

COUNTY PLANS References

- Annex J, *Radiological Protection for Emergency Workers*, Part III, Section A
- Procedure 12, *Radioprotective Drugs*

J.10.e Plan Content:

MONAP Content:

Annex B, *State Protective Action Guides*, Part IX, *Radioprotective Drugs*, states (in part),

“A. The Department of Health and Senior Services (DHSS), will provide Potassium Iodide (KI) for use by Department of Health and Senior Services workers who may be required to enter the plume exposure pathway EPZ where the committed dose equivalent to the thyroid is 10 REM or greater. The DHSS

has decided that evacuation is a more feasible logistical response for protection of the general public against radioiodine than is issuance of KI to a large population of people.”

“B. SEMA will acquire sufficient quantities of KI to support state and local emergency Organizations. The quantities to be purchased will be based on the number of Emergency workers anticipated to be operating in the risk area in the event of an Accident. Quantities purchased will also take into account the administration of one Daily dose of 130 mg. Of KI for a maximum of 10 days per emergency worker.”

“C. DHSS will advise local emergency organizations via the GAR when conditions have reached a level where available federal guidance suggests the use of KI. The decision to make KI available will be based on accident assessment information such as the expected duration and type of release. Areas affected, reaction time available and support logistics will be considered along with projected thyroid dose rates.”

“D. KI for state field monitoring personnel will be stored in the Section for Environmental Public Health under the supervision of the Section Administrator and will be inventoried annually. It will be distributed under the direction of the Section Administrator or his/her representative.”

“E. KI for local emergency workers, and for State Emergency personnel other than field monitoring teams, will be distributed to local government agencies in the areas that might be within the Plume Exposure Pathway EPZ. SEMA will provide sufficient KI, in amounts corresponding to the number of dosimetry sets identified in county planning documents, to the local EOCs. The KI will be stored, dispensed and annually inventoried in accordance with county procedures.”

“F. KI will be provided for persons for whom evacuation would not be feasible, under DHSS direction, as conditions warrant. KI will be provided by SEMA and will be stored and dispensed in accordance with those facilities' procedures (Fulton State Hospital and Fulton Reception and Diagnostic Center). Protective actions will be based on projected dose to the thyroid. Adjustments (age dependent) may be made for populations in special facilities.”

COUNTY PLANS Content:

Annex J, *Radiological Protection for Emergency Workers*, Part III, Section A, subsection 4, states “The supplies of radioprotective drugs are inventoried by the County Health Officer and distributed by the Emergency Management Director. When the use of radioprotective drugs is proposed by DHSS, all

emergency workers in the risk area will be offered the drug as a voluntary means of blocking the thyroid from uptake of radioactive iodine.”

Procedure 12, *Radioprotective Drugs*, details the use of KI for emergency workers.

Stocks of radioprotective drugs are maintained at some, local special needs facilities, and its issuance is governed by the plans (separately published) for each facility.

J.10.f Evaluation Criterion: *State and local organizations' plans should include the method by which decisions by the State Health Department for administering radioprotective drugs to the general population are made during an emergency and the predetermined conditions under which such drugs may be used by offsite emergency workers;*

J.10.f Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Radioprotective drugs, specifically Potassium Iodide (KI), are not recommended for ingestion by nor issued to the general public in the State of Missouri.

Provisions are made in both the State and county plans to provide KI on a voluntary basis to Emergency Workers working within the threatened portions of the EPZ.

J.10.f Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex B, *State Protective Action Guides*, Part IX, *Radioprotective Drugs*

COUNTY PLANS References

- Annex J, *Radiological Protection for Emergency Workers*, Part III, Section A
- Procedure 12, *Radioprotective Drugs*

J.10.f Plan Content:

MONAP Content:

Annex B, *State Protective Action Guides*, Part IX, *Radioprotective Drugs*, states (in part),

“A. The Department of Health and Senior Services (DHSS), will provide Potassium Iodide (KI) for use by Department of Health and Senior Services workers who may be required to enter the plume exposure pathway EPZ where the committed dose equivalent to the thyroid is 10 REM or greater. The DHSS has decided that evacuation is a more feasible logistical response for protection of the general public against radioiodine than is issuance of KI to a large population of people.”

“B. SEMA will acquire sufficient quantities of KI to support state and local emergency Organizations. The quantities to be purchased will be based on the number of Emergency workers anticipated to be operating in the risk area in the event of an Accident. Quantities purchased will also take into account the administration of one Daily dose of 130 mg. Of KI for a maximum of 10 days per emergency worker.”

“E. KI for local emergency workers, and for State Emergency personnel other than field monitoring teams, will be distributed to local government agencies in the areas that might be within the Plume Exposure Pathway EPZ. SEMA will provide sufficient KI, in amounts corresponding to the number of dosimetry sets identified in county planning documents, to the local EOCs. The KI will be stored, dispensed and annually inventoried in accordance with county procedures.”

COUNTY PLANS Content:

Annex J, *Radiological Protection for Emergency Workers*, Part III, Section A, subsection 4, states “The supplies of radioprotective drugs are inventoried by the County Health Officer and distributed by the Emergency Management Director. When the use of radioprotective drugs is proposed by DHSS, all emergency workers in the risk area will be offered the drug as a voluntary means of blocking the thyroid from uptake of radioactive iodine.”

Procedure 12, *Radioprotective Drugs*, details the use of KI for emergency workers.

J.10.g Evaluation Criterion: *Means of relocation;*

J.10.g Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions for the relocation of affected populations within the emergency planning zone are described in both the State and county plans. Relocation decisions are based on monitoring and analysis undertaken by the Department of Health and Senior Services in coordination with other technical resource agencies.

J.10.g Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Basic Plan, Part III, Section A, subsection 11
- Annex A, *Family Services Division Standard Operating Procedures*, Part IV

COUNTY PLANS References

- Annex I, *Protective Actions for the General Public*

J.10.g Plan Content:

MONAP Content:

The Basic Plan, Part III, Section A, subsection 11, states, “After the emergency phase has ended, the FCP will notify the risk counties and the state EOC to initiate restitution operations. The Department of Health and Senior Services (DHSS) in the FCP is responsible for recommending that affected areas can return to normal and which areas will be restricted. Individuals and businesses in the restricted area may have to be relocated for an undetermined amount of time.”

“In order to affect relocation, people will be allowed to reenter the restricted area in order to pack belongings and secure property on a short-term basis. These individuals will have to enter and exit the restricted area through predetermined points so emergency workers can survey for contamination and monitor/control dosimetry and exposure records.”

Annex A, *Family Services Division Standard Operating Procedures*, Part IV, says “It is possible that the Section for Environmental Public Health (DHSS) may recommend the relocation of residents (households) from areas affected by

prolonged contamination. Such situations will allow time for FSD to coordinate with SEMA and FEMA to formulate relocation plans at the time.”

Annex A, Department of Health and Senior Services Standard Operating Procedures, Part I, Section A states, in part, “Dose assessment during the emergency and during return, relocation and reentry in the emergency area will be made by DHSS using data provided by the utility and confirmed by field monitoring.”

COUNTY PLANS Content:

Annex I details protective actions for the general public that be undertaken in the event of an incident at Callaway Plant. Relocation, traffic control, reception and care facilities and related topics are described in detail.

J.10.h Evaluation Criterion: *Relocation centers in host areas which are at least 5 miles, and preferably 10 miles, beyond the boundaries of the plume exposure emergency planning zone;*

J.10.h Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Four reception and care centers are identified; all are at least five miles outside the emergency planning zone.

J.10.h Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * Annex A, *Family Services Division Standard Operating Procedures, Attachment 1, Part VI, Section A*
- Attachment 3 To Annex C, *Protective Action Subarea Descriptions*

COUNTY PLANS References:

- TAB 5 to Annex I, *Protective Actions for the General Public, Part III*
- Enclosures 1-4 of above

J.10.h Plan Contents:

MONAP Contents:

Annex A, Family Services Division Standard Operating Procedures, Attachment 1, Part VI, Section A, identifies the following reception and care

locations. All are more than five miles outside the Emergency Planning Zone.

1. The Hermann Middle School (located in Hermann on Highway 100, approximately 1 mile west of Highway 19) will serve as the RCC for the southeast quarter of the Emergency Planning Zone (EPZ).
2. The Montgomery County R-II High School (located on Highway 19, approximately 2 miles southeast of Montgomery City) will serve as the RCC for the northeast quarter of the EPZ.
3. Jason and Soldiers Hall(s) on the Lincoln University campus (located in Jefferson City on Lafayette St., between East Dunklin St. and Leslie Blvd.) will serve as the RCC for the southwest quarter of the EPZ.
4. Hearnese Multi-Purpose Building on the University of Missouri-Columbia campus {located in Columbia on Stadium Boulevard (Highway 740), next to Faurot Field Stadium} will serve as the RCC for the northwest quarter of the EPZ.

COUNTY PLANS Contents:

TAB 5 to Annex I, *Protective Actions for the General Public*, Part III, identifies the same locations; the cited enclosures provides maps of the centers.

J.10.i Evaluation Criterion: *Projected traffic capacities of evacuation routes under emergency conditions;*

J.10.i Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Plans identify 7,054 vehicles to be used in evacuation from the Emergency Planning Zone. The traffic capacity of the evacuation routes is 52,800 vehicles per hour. Licensee's *Evacuation Time Study* is published separately and is on-file. A revised *Evacuation Time Study* is included in Licensee's application. The revised study reflects increase construction and operational traffic as the result of Unit 2.

J.10.i Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Evacuation Time Study* (published separately)

COUNTY PLANS References:

- Attachment 3 to Annex I, *Summary of Evacuation Time Estimates*

J.10.i Plan Contents:

MONAP Contents:

N/A

COUNTY PLANS Contents:

Attachment 3 to Annex I, *Summary of Evacuation Time Estimates*, identifies 7,054 vehicles to be used in evacuation from the Emergency Planning Zone. The traffic capacity of the evacuation routes is 52,800 vehicles per hour.

J.10.j Evaluation Criterion: *Control of access to evacuated areas and organization responsibilities for such control;*

J.10.j Statement:

The FEMA review found the plans addressing this criterion to be adequate.

State and county plans provide for access control to all evacuated areas. Access control is a shared State and county responsibility.

J.10.j Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *State Highway Patrol Standard Operating Procedure*, Part III, Section B, subsection 2, paragraph c
- Annex A, *Department of Agriculture Standard Operating Procedure*, Part 1, Section 2, subsection a
- Annex A, *Department of Conservation Standard Operating Procedure*, Part III, Section B, subsection 2
- Annex H, *State Water Patrol Standard Operating Procedure*, Part II, Section D

COUNTY PLANS References:

- TAB 2 to Annex I, *Traffic and Access Control*, Parts I and II

J.10.j Plan Contents:

MONAP Contents:

The cited plan references specify the responsibilities of the Highway Patrol, Department of Agriculture, Department of Conservation and State Water Patrol in establishing and maintaining access control to evacuated areas.

COUNTY PLANS Contents:

The responsibilities of county agencies assigned to traffic and access control are detailed in the cited references.

J.10.k Evaluation Criterion: *Identification of and means for dealing with potential impediments (e.g., seasonal impassability of roads) to use of evacuation routes, and contingency measures;*

J.10.k Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The State Department of Transportation (MoDOT) is responsible for removal of impediments from State and Federal highways and assists, as necessary, county authorities in removing impediments from county and local roadways. The counties are responsible for removal of impediments from county and local roads. Procedures and resources for all agencies are identified.

J.10.k Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *Department of Transportation Standard Operating Procedures*, Part V, Section E

COUNTY PLANS References:

- TAB 2 to Annex I, *Traffic and Access Control*, Part IV

J.10.k Plan Contents:

MONAP Contents:

Annex A, *Department of Transportation Standard Operating Procedures*, Part V, Section E, states, "The MoDOT will be responsible for the removal of impediments from all state highways, which are designated evacuation routes.

MoDOT will remove snow, ice, objects such as fallen trees or rocks, which impede traffic flow, disabled vehicles, and other impediments, to traffic flow on state highway routes. The cognizant MoDOT district office from the nearest highway maintenance facility will dispatch personnel and equipment. The need for impediment removal will be communicated to the MoDOT representative in the SEOC who will communicate the nature of the impediment and location to the district office by telephone or radio. The district office will dispatch appropriate equipment and personnel to the location from the nearest maintenance facility. Other MoDOT maintenance facilities in the area will be available to support. MoDOT will also assist the affected counties/cities with impediment removal from county/city roads upon request. The affected county/city will communicate the nature and location of the impediment and request assistance to SEMA at the SEOC. SEMA will request assistance from the MoDOT representative in the SEOC.”

COUNTY PLANS Contents:

TAB 2 to Annex I, *Traffic and Access Control*, Part IV, identifies the types of impediments that might be encountered and the general procedure for removing same.

J.10.1 Evaluation Criterion: *Time estimates for evacuation of various sectors and distances based on a dynamic analysis (time-motion study under various conditions) for the plume exposure pathway emergency planning zone*

J.10.1 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The *Evacuation Time Study* (published separately) is summarized in the county plans. The maximum estimate for evacuation of the EPZ ranges from a low time of 2 hours 51 minutes under optimum conditions to 4 hours 49 minutes under adverse conditions (snow, ice, etc.).

J.10.1 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Evacuation Time Study* (published separately)

COUNTY PLANS References:

- Attachment 3 to Annex I, *Summary of Evacuation Time Estimates*

J.10.l Plan Contents:

MONAP Contents:

N/A

COUNTY PLANS Contents:

Per Attachment 3 to Annex I, *Summary of Evacuation Time Estimates*, evacuation requirements of the EPZ range from a low time of 2 hours 51 minutes under optimum conditions to 4 hours 49 minutes under adverse conditions (snow, ice, etc.).

J.10.m Evaluation Criterion: *The bases for the choice of recommended protective actions from the plume exposure pathway during emergency conditions. This shall include expected local protection afforded in residential units or other shelter for direct and inhalation exposure, as well as evacuation time estimates.*

J.10.m Statement:

The FEMA review found the plans addressing this criterion to be adequate.

A detailed discussion of the bases for protective actions, including local protection afforded in sheltering, is contained in the *State Protective Action Guidelines*.

J.10.m Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex B, *State Protective Action Guidelines*, Part I
- *Evacuation Time Study* (published separately)

COUNTY PLANS References:

- N/A

J.10.m Plan Contents:

MONAP Contents:

Part I of the *State Protective Action Guidelines* states (in part), “In the event of a nuclear incident, a contaminating event could result which may have public health implications over a large area with diverse population densities. A

contamination event includes, but is not limited to accidents at nuclear facilities, transportation accidents, and fallout from nuclear devices under peacetime conditions. If such an incident occurs, an estimate will be made of the radiation dose which affected individuals could receive if protective actions were not taken. This dose estimation is called the projected dose.”

“A protective action is an action taken to avoid or reduce this projected dose when the benefits derived from such actions are sufficient to offset any undesirable effects of the protective action. The State Protective Action Guide (PAG) is the projected dose to individuals in the population which warrant taking protective actions.”

The decision to initiate a protective action may be a complex process with the benefits of taking such action being weighed against the risks under difficult emergency conditions with little time available in which to act. PAGs have, therefore, been developed to reduce to manageable levels the decisions that must be made to protect the public in the event of a nuclear incident. The response for a given situation will be based on the State PAGs and the spectrum of possible protective action options available at that time.”

COUNTY PLANS Contents:

N/A

- J.11** **Evaluation Criterion:** *Each State shall specify the protective measures to be used for the ingestion pathway, including the methods for protecting the public from consumption of contaminated foodstuffs. This shall include criteria for deciding whether dairy animals should be put on stored feed. The plan shall identify procedures for detecting contamination, for estimating the dose commitment consequences of uncontrolled ingestion, and for imposing protection procedures such as impoundment, decontamination, processing, decay, product diversion, and preservation. Maps for recording survey and monitoring data, key land use data (e.g., farming), dairies, food processing plants, water sheds, water supply intake and treatment plants and reservoirs shall be maintained. Provisions for maps showing detailed crop information may be by including reference to their availability and location and a plan for their use. The maps shall start at the facility and include all of the 50-mile ingestion pathway EPZ. Up-to-date lists of the name and location of all facilities which regularly process milk products and other large amounts of food or agricultural products originating in the ingestion pathway Emergency Planning Zone, but located elsewhere, shall be maintained.*

J.11 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The State, due to the multi-jurisdictional nature of the ingestion pathway, bears the responsibility for all decision-making and implementation. The State plan details the protective measures to be taken, the means by which decisions are made, and the agencies tasked with addressing this matter.

J.11 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *State Emergency Management Agency SOP*, Part II, Section B, subsection 4
- Annex A, *State Emergency Management Agency SOP*, Part II, Section B, subsection 4
- Appendix 2, *Emergency Conditions Classification System*, Parts I thru IV
- Annex A, *Department of Agriculture SOP*, Part III, Section B
- Annex B, *State Protective Action Guidelines*
- Annex B, Part VI, *Protective Action Guides for Exposure from Food Contaminated with Radioactive Material*
- Annex G, *Environmental Sampling and Analysis*

COUNTY PLANS References:

- Procedure 14, *Relocation/Re-entry/Return/Recovery*

J.11 Plan Contents:

MONAP Contents:

Annex A, *State Emergency Management Agency SOP*, Part II, Section B, subsection 4 provides for regular testing of communications systems linking the State and ingestion pathway counties.

Appendix 2, *Emergency Conditions Classification System*, Parts I thru IV provide for assessment of the dose projection within the ingestion pathway and the classification levels at which the protective actions, as placing lactating animals in shelter and on covered feed and water, implementing product embargo, etc., will be undertaken.

Annex A, *Department of Agriculture SOP*, Part III, Section B, states (in part), “The Department of Agriculture emergency representative to the SEOC will be the liaison with the USDA State Emergency Board Chairperson. The SEOC representative will advise the Chairperson of developing events that affect the agricultural community. In coordination with the USDA State Emergency

Board and the Department of Health and Senior Services, the Department of Agriculture will assist in the development of protective actions which may range from sheltering of livestock and preventing their consumption of affected feeds and water, to the condemnation or control of agricultural products intended for human consumption. Protective actions will be developed according to criteria established in Annex B, *State Protective Action Guides*. Maps showing detailed crop information for the 50 mile IPZ will be available from Department of Agriculture.”

“Protective actions for the agricultural community in the IPZ will be communicated through the county FS office with support from the University of Missouri Extension organization and FS and FHA personnel, as specified in Section A of this SOP. The USDA State Emergency Board and County Emergency Boards will also support this function under direction of the USDA State Emergency Board Chairperson. News releases for the IPZ will be developed by SEMA personnel in the SEOC with the assistance of the Department of Agriculture EOC representative and the Department of Natural Resources EOC representative. News releases for the IPZ will be released to the news media from the SEOC.”

“Field employees of the Department of Agriculture will be designated by department officials identified in Appendix 3 to form and assist sampling teams which will in coordination with DHSS, collect grain, raw crop, milk samples, and samples from food processing for radiological analysis. Department officials will be called by the EOC representative and will be requested to organize sampling teams from field personnel in their respective divisions. The sampling teams will collect such samples from locations as directed by DHSS. Samples will be transported to pick-up points designated by SEMA and transported to the University of Missouri Research Reactor (MURR) laboratory or the EPA laboratory (National Air and Radiation Environmental Laboratory (NAREL) for analysis. The Department of Agriculture will assist DHSS, at DHSS direction, with diversion or disposal of radiologically contaminated food crops, and milk originating in the IPZ. The United States Food and Drug Administration (FDA) is the federal agency responsible for developing criteria relating to the acceptability of food for human consumption. FDA guidance will be used in the decision to implement protective actions to control agricultural products.”

This SOP and that of the Department of Health and Senior Services also note maps for recording survey and monitoring data, key land use data (e.g., farming), dairies, food processing plants, water sheds, water supply intake and treatment plants and reservoirs are maintained. Maps showing detailed crop information are maintained jointly by the Department of Agriculture and the County Ag Extension Service. Up-to-date lists of the name and location of all facilities which regularly process milk products and other large amounts of food or agricultural products originating in the ingestion pathway Emergency

Planning Zone are maintained. All maps are separately published but available immediately for use in the event of an incident.

Annex B, *State Protective Action Guidelines*, states (in part): “Population exposure from the intermediate phase will be based on projected doses using 1 year derived PAG's for the various ingestion pathways and summing the results for each and calculated or measured integrated doses from exposure to deposited materials for years 1, 2, and 50.”

Annex B, *State Protective Action Guidelines*, Part IV, states (in part), “Protective Action Guides (PAGs) are provided for the ingestion pathway. The PAGs are 5 mSv (0.5 Rem) for committed effective dose equivalent (CEDE) or 50 mSv (5 Rem) committed dose equivalent (CDE) to an individual tissue or organ, whichever is more limiting. These correspond to the intervention levels of dose consensus values set by international organizations. These levels are radiation doses at which introduction of protective actions should be considered (ICRP 1984b).”

Annex G, *Environmental Sampling and Analysis*, details sampling procedures in both the plume and ingestion pathways.

Part VI, *Protective Action Guides for Exposure from Food Contaminated with Radioactive Materials*, outlines the range of protective options as follows:

1. For pasture

- (a) Removal of lactating dairy cows from contaminated pasturage and substitution of uncontaminated stored feed.
- (b) Substitute source of uncontaminated water.
- (c) Provide shelter, if possible.

2. For milk:

- (a) Withholding of contaminated milk from the market to allow radioactive decay of short-lived radionuclides. This may be achieved by storage of frozen fresh milk, frozen concentrated milk, or frozen concentrated milk products.

Intake of Cesium via the meat-man pathway for adult may exceed that of the milk pathway; therefore DIL levels in milk should cause protective actions for meat as appropriate. If both Cs-134 and Cs-137 are equally present, as might be expected in reactor accidents, the response levels should be reduced by a factor of 2.

- (b) Storage for prolonged times at reduced temperatures also is feasible, provided ultra-high temperature pasteurization techniques are employed for processing.
- (c) Diversion of fluid milk for production of dry whole milk, nonfat dry milk,

butter or evaporated milk.

3. For fruits and vegetables:

- (a) Washing, brushing, scrubbing, or peeling to Remove surface contamination.
- (b) Preservation by canning, freezing, and dehydration or storage to permit radioactive decay of short-lived radionuclides.

4. For grains:

- (a) Milling
- (b) Polishing

5. For other food products:

- (a) Processing to remove surface contamination.

6. For meat and meat products:

- (a) Consider on a case-by-case basis.

7. For animal feeds:

- (a) Actions relative to animal feeds, other than pasture, should be carried out on a case-by-case basis.
- (b) Increase non-contaminated mineral calcium to a maximum.

COUNTY PLANS Contents:

Procedure 14, *Relocation/Re-entry/Return/Recovery*, indicates that The State has the authority to make and implement decisions relating to the Ingestion Pathway.

J.12 Evaluation Criterion: *Each organization shall describe the means for registering and monitoring of evacuees at relocation centers in host areas. The personnel and equipment available should be capable of monitoring within about a 12 hour period all residents and transients in the plume exposure EPZ arriving at relocation centers.*

J.12 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The American Red Cross, through separate agreement with the State Emergency Management Agency, provides registration of all persons relocated to reception and care centers. The reception and care center plans provide for the

provisioning of personnel and equipment needed for 12-hour monitoring.

J.12 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *Family Services Division SOP, Part III, Procedures for Activating Reception and Care Centers*
- Annex A, *Family Services Division SOP, Part IV, Registration and Information*
- Attachment 1 to Annex A, *Family Services Division SOP*
- Reception and Care Center Plans

COUNTY PLANS References:

- Annex I, *Protective Actions for the General Public*

J.12 Plan Contents:

MONAP Contents:

Annex A, *Family Services Division SOP, Part III, Procedures for Activating Reception and Care Centers*, provides the overall detail of the RCC operations at the four Callaway-related centers.

Annex A, *Family Services Division SOP, Part IV, Registration and Information*, states, “The purpose of registration is to collect, assemble, evaluate, and supply information regarding the whereabouts of specified persons and families in a disaster, or provide the means, whereby persons in RCCs can notify family members and post offices of their new addresses, and to assist in reuniting families separated due to disaster conditions.

A. ARC personnel in concert with the FSD will be responsible for all registration and information activities.

B. FSD personnel with assistance from ARC will be responsible for providing information on the number, location, and condition of evacuees.

C. Personnel interviewing and processing registration forms by ARC will assure that all inquiries regarding evacuee’s are processed as soon as possible.”

Attachment 1 to Annex A, *Family Services Division SOP*, specifies that The minimum number of radiological monitors needed at each RCC to complete evacuee monitoring in 12 hours is a. Jason & Soldiers Hall(s), Lincoln University – six radiological monitors; b. Hearnes Multipurpose Building –

eight radiological monitors; c. Hermann Middle School – six radiological monitors; and, d. Montgomery County R-II High School – six radiological monitors.

Reception and Care Center Plans, published separately, detail procedures for setting up the centers, operating them, monitoring persons and vehicles and recording all data.

COUNTY PLANS Contents:

Annex I, *Protective Actions for the General Public*, states, “If the offsite release is of a level to warrant evacuation, the State will establish Reception and Care Centers outside of the evacuation area where the general public can be surveyed for contamination and decontaminated, as necessary. Surveying and decontamination will be done by the State.”

K. Radiological Exposure Control Planning Standard: Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

K.1 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

K.2 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

K.3.a Evaluation Criterion: Each organization shall make provision for 24-hour-per-day capability to determine the doses received by emergency personnel involved in any nuclear accident, including volunteers. Each organization shall make provisions for distribution of dosimeters, both self-reading and permanent record devices.

K.3.a Statement:

The FEMA review found the plans addressing this criterion to be adequate.

State plans and procedures details means of determining the doses received by emergency workers, set exposure limits, provide for the distribution of dosimeters and permanent record devices and detail record-keeping procedures for same.

K.3.a Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *Department of Health and Senior Services SOP*, Part III, Section B
- Annex A, *Department of Health and Senior Services SOP*, Part II, Section E
- Attachments 3, 4, and 5 to Annex B, *Emergency Worker Dose Limits*

COUNTY PLANS References:

- Annex J, *Radiological Exposure Control for Emergency Workers*

K.3.a Plan Contents:

MONAP Contents:

The Department of Health and Senior Services is the primary State agency

responsible for overall dose measurement and determination. Annex A, *Department of Health and Senior Services SOP*, Part III, Section B, provides for the 24-hour availability and notification of department personnel.

Annex A, *Department of Health and Senior Services SOP*, Part II, Section E, states, “Self-reading dosimetry provided to emergency personnel will be supplemented by Optically Stimulated Luminescence (OSL) dosimeter or TLD. DRD’s or ED will be read and a record of the reading will be made every 30 minutes while an emergency worker is in the affected area. Instructions for use of Dosimetry and forms for recording emergency worker dosimeter readings and for indicating the Revised Dose Limit are provided to all emergency workers (Attachments 4 and 5 to Annex B).”

Attachment 3 to Annex B, *Emergency Worker Dose Limits*, discusses and states the dose limits permitted to be experienced by emergency workers.

Attachment 5 to Annex B provides specific instruction for the use of dosimetry by emergency workers. Attachment 4 to the same annex is a form used by emergency workers to record their dosimeter readings.

COUNTY PLANS Contents:

Annex J, *Radiological Exposure Control for Emergency Workers* provides a detailed description of monitoring, record-keeping, dose limits and related topics.

K.3.b Evaluation Criterion: *Each organization shall ensure that dosimeters are read at appropriate frequencies and provide for maintaining dose records for emergency workers involved in any nuclear accident.*

K.3.b Statement:

The FEMA review found the plans addressing this criterion to be adequate.

In both the State and county plans are requirements that dosimeters are read every 30 minutes.

K.3.b Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *Department of Health and Senior Services SOP*, Part II, Section E

COUNTY PLANS References:

- Annex J, *Radiological Exposure Control for Emergency Workers*

K.3.b Plan Contents:

MONAP Contents:

Annex A, *Department of Health and Senior Services SOP*, Part II, Section E requires dosimetry is read every thirty minutes.

COUNTY PLANS Contents:

Annex J, *Radiological Exposure Control for Emergency Workers*, requires that dosimeters are read every 30 minutes and that the readings are recorded on forms provided with each dosimeter.

- K.4 Evaluation Criterion:** *Each State and local organization shall establish the decision chain for authorizing emergency workers to incur exposures in excess of the EPA General Public Protective Action Guides (i.e., EPA PAGs for emergency workers and lifesaving.*

K.4 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Emergency Workers who may exceed the 25 rem exposure limit are required to volunteer, be fully apprised of all risks and receive authorization from DHSS technical personnel (state workers) or the county commissioner and DHSS technical personnel (county and local workers) before engaging in lifesaving activities.

K.4 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 5 To Annex B, *Emergency Worker – Instructions For Use Of Dosimetry*

COUNTY PLANS References:

- Annex J, *Radiological Exposure Control For Emergency Workers*, Part III, Section D, subsection 4

K.4 Plan Contents:

MONAP Contents:

Attachment 5 To Annex B, *Emergency Worker – Instructions For Use Of Dosimetry*, clearly states, “In the event that exposures for emergency workers beyond allowable limits are determined to be necessary for lifesaving situations, or to avoid extensive exposure to large populations, authorization for such activities will be made by qualified Department of Health and Senior Services technical personnel. Persons undertaking any emergency operation in which the dose will exceed 25 rem will do so only on a voluntary basis with full awareness of risk involved.”

COUNTY PLANS Contents:

Annex J, *Radiological Exposure Control For Emergency Workers*, Part III, Section D, subsection 4, states, “In the event that exposures for emergency workers beyond 25 rem are determined to be necessary for lifesaving situations, authorization for such activities will be made by the Commissioners in the EOC, in consultation with qualified DHSS technical personnel. In such circumstances, the following criteria apply: a. Emergency workers will be restricted to lifesaving missions and will be required to seek specific authorization to exceed this limit. b. The maximum radiological exposure control measures available will be afforded to the emergency workers. c. Emergency workers selected for the mission are volunteers and are fully advised of the potential risk.”

K.5.a Evaluation Criterion: *Each organization as appropriate, shall specify action levels for determining the need for decontamination.*

K.5.a Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The threshold for decontamination is established at 100 cpm above background in both the State and county plans.

K.5.a Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex D, *Radiation Exposure Control*, Part III, Section E, subsection 3

COUNTY PLANS References:

- Annex J, *Radiological Exposure Control for Emergency Workers*, Part

III, Section D, subsection 1

K.5.a. Plan Contents:

MONAP Contents:

Annex D, *Radiation Exposure Control*, Part III, Section E, subsection 3, states, “Personnel and equipment are considered radiologically contaminated if a reading of 100 cpm (0.16 mR/hr) above background or higher is observed on the CDV-700 survey meter. Decontamination will continue until survey meter readings are below 100 cpm (0.16 mR/hr) above background. If these levels cannot be reached, emergency workers will contact DHSS for additional instructions. At facilities which do not utilize radiological survey instrumentation supplied by the state (i.e. the UMC Hospital and Clinics) decontamination action levels will be determined by the type of instrumentation utilized and by internal procedures for those facilities.

There are numerous parallel references in other plan locations.

COUNTY PLANS Contents:

Annex J, *Radiological Exposure Control for Emergency Workers*, Part III, Section D, subsection 1, provides the following, parallel statement: “The exposure rate action level requiring decontamination is defined as 0.166 mR/hr or 100 Counts Per Minute (CPM) above background on a CDV-700 for persons, and 0.166 mR/hr or 100 CPM above background on a CDV-700 for vehicles, equipment, and supplies in accordance with FEMA-REP-14.”

K.5.b Evaluation Criterion: *Each organization, as appropriate, shall establish the means for radiological decontamination of emergency personnel wounds, supplies, instruments and equipment, and for waste disposal.*

K.5.b Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Adequate procedures for decontaminating emergency workers, their equipment and vehicles and for the subsequent disposal of contaminated waste are detailed in the State and county plans.

K.5.b Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex D, *Radiation Exposure Control*

COUNTY PLANS References:

- Annex J, *Radiological Exposure Control for Emergency Workers*

K.5.b Plan Contents:

MONAP Contents:

Annex D, *Radiation Exposure Control*, details the procedures for personnel, equipment and vehicular decontamination at all reception and care centers. The centers are designated as the decontamination sites for both the general public and emergency workers.

COUNTY PLANS Contents:

Annex J parallels Annex D of the State plan but further provides that radiological waste disposal services will be provided by Callaway plant.

- K.6.a** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- K.6.b** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- K.6.c** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*
- K.7** *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

- L. Medical and Public Health Support Planning Standard: *Arrangements are made for medical services for contaminated injured individuals.***
- L.1 Evaluation Criterion: *Each organization shall arrange for local and backup hospital and medical services having the capability for evaluation of radiation exposure and uptake, including assurance that persons providing these services are adequately prepared to handle contaminated individuals.***

L.1 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The State and county plans identify the primary and secondary medical facilities to be utilized in treating potentially-contaminated patients. Personnel of these facilities are trained at least annually.

L.1 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 2 to Annex F, *Emergency Medical*
- Annex E, *Training*

COUNTY PLANS References:

- Annex K, *Medical and Public Health Support, Part II*

L.1. Plan Contents:

MONAP Contents:

Attachment 2 to Annex F, *Emergency Medical*, identifies the following medical facilities:

PRIMARY

Callaway Co. Community Hospital
Fulton, MO

BACK-UP

University of Missouri-Columbia Hospital and Clinics
Columbia, MO

COUNTY PLANS Contents:

Annex K, *Medical and Public Health Support*, Part II, identifies the following hospitals:

MEDICAL TREATMENT

A. The primary medical facility serving the population of the plume exposure pathway EPZ is the Callaway Community Hospital in Fulton.

B. The backup medical facility serving the population of the plume exposure pathway EPZ is the University of Missouri Hospital and Clinics in Columbia.

C. The above named medical facilities, primary and backup, are capable of evaluating radiation exposure and uptake, and include staff who are adequately prepared to handle contaminated individuals.

L.2 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

L.3 **Evaluation Criterion:** *Each State shall develop lists indicating the location of public, private and military hospitals and other emergency medical services facilities within the State or contiguous States considered capable of providing medical support for any contaminated injured individual. The listing shall include the name, location, type of facility and capacity and any special radiological capabilities. These emergency medical services should be able to radiologically monitor contamination personnel, and have facilities and trained personnel able to care for contaminated injured persons.*

L.3. Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The Missouri Department of Health and Human Services maintains a comprehensive listing of medical facilities with these capabilities; that list is available to personnel of the Department and the State EOC.

L.3 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Maintained Separately

COUNTY PLANS References:

- N/A

L.3 Plan Contents:

MONAP Contents:

Maintained Separately

COUNTY PLANS Contents:

N/A

L.3 Recommendation – *Listings of the medical facilities within the State or contiguous States considered capable of providing medical support for any contaminated injured individual should be added as an appendix to Annex F of the State plan.*

L.4 Evaluation Criterion: *Each organization shall arrange for transporting victims of radiological accidents to medical support facilities.*

L.4. Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Ambulance services designated as primary and backup response organizations responsible for transporting victims of radiological accidents to medical facilities are identified.

L.4 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 2 to Annex F, *Emergency Medical*
- Annex E, *Training*

COUNTY PLANS References:

- Annex K, *Medical and Public Health Support*, Part III

L.4 Plan Contents:

MONAP Contents:

Attachment 2 to Annex F, *Emergency Medical*, identifies Callaway County Ambulance Service (Fulton) and the University of Missouri-Columbia Ambulance Service as the primary and backup ambulance providers designated

to transport patients who may be contaminated.

COUNTY PLANS Contents:

Annex K, *Medical and Public Health Support*, Part III, identifies the following resources:

TRANSPORTATION OF INJURED

A. The primary ambulance service serving the population of the plume exposure pathway EPZ is the Callaway County Ambulance District.

B. The backup ambulance service serving the population of the plume exposure pathway EPZ is the University of Missouri Hospital and Clinics Emergency Medical Services.

**M. Recovery and Reentry Planning and Postaccident Operations Planning
Standard: *General plans for recovery and reentry are developed.***

M.1 Evaluation Criterion: *Each organization, as appropriate, shall develop general plans and procedures for reentry and recovery and describe the means by which decisions to relax protective measures (e.g., allow reentry into an evacuated area) are reached. This process should consider both existing and potential conditions.*

M.1 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Plans and procedures detail reentry and recovery operations and describe the means by which decisions to relax protective measures are to be made.

M.1 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * *Basic Plan*, Part III, Section A, Subsection 11
- * *Basic Plan*, Part IV, Section D, subsection 7
- * Annex A, *State Emergency Management Agency SOP*, Part III, Section C
- Annex A, *Department of Health and Senior Services SOP*, Part II, Section A
- * Annex A, *Department of Health and Senior Services SOP*, Part II, Section H
- * Annex B, *Protective Action Guidelines*, Part VII
- Attachment 1 to Annex B, *Reentry and Return*

COUNTY PLANS References:

- Procedure 14, *Relocation/Reentry/Return/Recovery*
- * Supplement 1 to Procedure 14

M.1 Plan Contents:

MONAP Contents:

The *Basic Plan*, Part III, Section A, Subsection 11, states, “After the emergency phase has ended, the FCP will notify the risk counties and the state EOC to initiate restitution operations. The Department of Health and Senior Services (DHSS) in the FCP is responsible for recommending that affected areas can

return to normal and which areas will be restricted. Individuals and businesses in the restricted area may have to be relocated for an undetermined amount of time.”

“In order to affect relocation, people will be allowed to reenter the restricted area in order to pack belongings and secure property on a short-term basis. These individuals will have to enter and exit the restricted area through predetermined points so emergency workers can survey for contamination and monitor/control dosimetry and exposure records.”

The *Basic Plan*, Part IV, Section D, subsection 7, states, “The local law enforcement agencies will supervise area access control and reentry to evacuated off-site areas, in accordance with technical advice from DHSS.”

Annex A, *State Emergency Management Agency SOP*, Part III, Section C, that during the recovery period, “SEMA will continue to coordinate the support of other state and federal agencies on behalf of the Department of Health and Senior Services. The MoRET will continue to support the DHSS as long as required. SEMA involvement in the incident will terminate when the Department of Health and Senior Services Director, in consultation with the SEMA Director, determines that coordination or other assistance is no longer required.”

Annex A, *Department of Health and Senior Services SOP*, Part II, Section A, states, “DHSS is responsible for providing advice to the Governor through SEMA, and to local EOCs concerning the decision affecting protective responses. Dose assessment during the emergency and during return, relocation and reentry in the emergency area will be made by DHSS using data provided by the utility and confirmed by field monitoring.”

Annex A, *Department of Health and Senior Services SOP*, Part II, Section H, states, “DHSS will be responsible for determining when radiation levels and contamination levels are such that return and reentry of persons into evacuated areas and disposing of contaminated materials is appropriate, or if relocation of additional persons from the affected area is warranted. After an evacuation, persons will be allowed to return to the restricted area when the risk has been sufficiently averted or reduced to levels acceptable for members of the general population, as specified in the State Protective Action Guides (PAGs). The affected counties and the State Emergency Operations Center will be notified of any required counter measures. Counter measures will be directed by DHSS.”

Annex B, *Protective Action Guidelines*, Part VII, states (in part), “Once protective actions have been initiated, they will be maintained for a period of time sufficient to ensure that most of the projected dose to the exposed population is avoided.”

“A. Lifting of Protection Controls

The lifting of controls for protective actions may be justified on the basis of cost savings when the corresponding health risks have been adequately reduced. For example, the processing costs incurred by the public, state, and local governments in maintaining access control, pasture control, milk control, or food and water control will exceed the risk reduction value of these controls after a certain period of time. At this point, the controls should remain relatively constant with respect to time, while their significance in reducing the risk will decrease as the released nuclides are decontaminated, dispersed or decay away.”

“B. Reentry

It may be necessary for individuals to reenter a restricted area (zone) before the projected dose is reduced to acceptable guide levels. Examples include: Police patrols, maintenance of essential services: fire protection and utilities, care for farm animals, secure machinery or retrieve important possessions. Recommendations relative to reentry of those persons will be determined on a case-by-case basis and will be based on consideration of the remaining radiation risk and the undesirable effects of continuing exclusion from the area and criteria found in EPA/400-R-92-001. Reentry procedures are established in Attachment 1 to Annex B.”

“C. Return of Evacuated and/or Relocated Population

After an evacuation or relocation, persons will be allowed to return to an affected area when the risk has been averted or reduced to levels acceptable for members of the general population. Decisions for return to restricted areas (zones) will be based on environmental data as applied to the protective action guides and criteria in EPA/400-R-92-001. Projected doses will be based on a first year, second year and fifty year exposure period. Projected doses shall not exceed 2 rem (TEDE) in the first year, 0.5 rem (TEDE) in any single year after the first, and a cumulative dose over 50 years of 5 rem (TEDE). Persons will be allowed to return immediately to areas where field gamma measurements indicate that exposure rates are near normal background levels (not in excess of twice the normal background in the area before the incident.)”

Attachment 1 to Annex B, *Reentry and Return*, details steps to be undertaken in these phases.

COUNTY PLANS Contents:

Procedure 14, *Relocation/Reentry/Return/Recovery*, details the situations, responsibilities and procedures used by the counties during these phases.

Supplement 1 to Procedure 14 provides detailed worksheets for use by county

agencies during these phases.

M.2 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

M.3 **Evaluation Criterion:** *Each licensee and State plan shall specify means for informing members of the response organizations that a recovery operation is to be initiated, and of any changes in the organizational structure that may occur.*

M.3 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

A means for informing members of the response organizations that a recovery operation is to be initiated is provided in the Missouri Nuclear Accident Plan.

M.3 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex B, *Protective Action Guidelines*, Parts V and VI

COUNTY PLANS References:

- The criterion is not applicable to counties

M.3 Plan Contents:

MONAP Contents:

Attachment 1 to Annex B, Parts V and VI, state, “Recommendations for relaxation of protective measures will be communicated to state and local officials and support organizations through the same means used for the initiation of protective action recommendations. The same primary and alternate communications system will be utilized. Recommendations will be communicated to the public by pre-established intervals over EAS stations. Media announcements will also be made through the JPIC. Additionally, recommendations will be communicated by the Department of Agriculture through the USDA emergency board network.”

“The decisions to implement return or reentry will be made by the county Commissioner/ Mayor through the same direction and control mechanism prescribed for initiation of protective actions. Coordination with all agencies for access and traffic control and security for return or reentry will be handled in the same manner used in the initiation of protective measures. Proper dosimetry for

persons reentering a restricted zone will be assured and issued by the local EOC. The same emergency support organizations will be responsible for these functions during return. The public will be advised to use the same return routes designated for evacuation or relocation.”

COUNTY PLANS Contents:

N/A

M.4 Evaluation Criterion: *Each plan shall establish a method for periodically estimating total population exposure.*

M.4 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

A method for periodically estimating total population exposure is stated in the State plan. This is a State/Federal responsibility. The counties do not have technical means to undertake this activity.

M.4 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex B, *Protective Action Guidelines*, Part VII

COUNTY PLANS References:

- Not applicable to county jurisdictions

M.4 Plan Contents:

MONAP Contents:

Attachment 1 to Annex B, *Protective Action Guidelines*, Part VII, states, “DHSS, other state agencies, utility, and federal radiological assessment personnel will continue monitoring, sampling and dose assessment activities throughout the return/reentry phase until it is determined that no further threat to the public exists.”

COUNTY PLANS Contents:

N/A

N. Exercises and Drills Planning Standard: *Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.*

N.1.a Evaluation Criterion: *An exercise is an event that tests the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations. The emergency preparedness exercise shall simulate an emergency that results in offsite radiological releases which would require response by offsite authorities. Exercises shall be conducted as set forth in NRC and FEMA rules.*

N.1.a Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Both the State and county plans provide details of exercise programs meeting this criterion.

N.1.a Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Basic Plan, Part V, Training and Exercises*
- *Annex A, State Emergency Management Agency SOP, Part II, Section D*
- *Annex E, Training*

COUNTY PLANS References:

- *Annex M, Exercises and Drills, Parts II and III*

N.1.a Plan Contents:

MONAP Contents:

The *Basic Plan, Part V*, states (in part) “To test the operability of the Nuclear Accident Plan, exercises will be conducted at least annually in accordance with guidelines set forth in NUREG-0654, FEMA-REP-1, Rev. 1; 44 CAR 50, and 10 CAR 50 (see Annex E). The state will participate in nuclear power plant accident exercises anytime an affected county is required to participate. Qualified observers at the request of the State Emergency Management Agency will monitor the drills and/or exercises.”

Annex A, State Emergency Management Agency SOP, Part II, Section D, states,

“1. The Department will prescribe special training, which pertains to technical operations under the control of the Department of Health and Senior Services. All other technical training will be as prescribed in state and local agency directives.”

“2. Appropriate elements of contingency plans will be exercised periodically by the SEMA. An exercise shall include mobilization of state and local personnel and resources adequate to verify the capability to respond to an accident scenario requiring response. The organization shall provide for critique of the biennial exercise by federal and state observers/evaluators as soon as practicable after the exercise. The scenario should be varied from year to year such that major elements of the plans and preparedness organizations are tested within a six-year period. Each organization shall make provisions to start an exercise between 6:00 p.m. and 4:00 a.m. once every six years. Exercises shall be conducted under various weather conditions. Some exercises shall be unannounced.”

“Exercises requested by the Department of Health and Senior Services, or joint SEMA/DHSS exercises, will be based on scenarios developed by the Department of Health and Senior Services.”

Annex E, *Training*, sets forth in detail the exercise and drill requirements and schedule.

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Parts II and III, detail county participation in, requirements for and scheduling of drills and exercises.

- N.1.b Evaluation Criterion:** *An exercise shall include mobilization of State and local personnel and resources adequate to verify the capability to respond to an accident scenario requiring response. The organization shall provide for a critique of the annual exercise by Federal and State observers/evaluators. The scenario should be varied from year to year such that all major elements of the plans and preparedness organizations are tested within a five-year period. Each organization should make provisions to start an exercise between 6:00 p.m. and midnight, and another between midnight and 6:00 a.m. once every six years. Exercises should be conducted under various weather conditions. Some exercises should be unannounced.*

N.1.b Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Both the State and county plans contain language identical to the requirements

of this criterion.

N.1.b Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *State Emergency Management Agency SOP*, Part II, Section D

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part II

N.1.b Plan Contents:

MONAP Contents:

Annex A, *State Emergency Management Agency SOP*, Part II, Section D, states, “Appropriate elements of contingency plans will be exercised periodically by the SEMA. An exercise shall include mobilization of state and local personnel and resources adequate to verify the capability to respond to an accident scenario requiring response. The organization shall provide for critique of the biennial exercise by federal and state observers/evaluators as soon as practicable after the exercise. The scenario should be varied from year to year such that major elements of the plans and preparedness organizations are tested within a six-year period. Each organization shall make provisions to start an exercise between 6:00 p.m. and 4:00 a.m. once every six years. Exercises shall be conducted under various weather conditions. Some exercises shall be unannounced.”

COUNTY PLANS Contents:

Annex M, Part II of the county plans includes parallel language meeting this requirement.

N.2 *A drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. A drill is often a component of an exercise. A drill shall be supervised and evaluated by a qualified drill instructor. Each organization shall conduct drills, in addition to the annual exercise at the frequencies indicated below:*

N.2.a *Evaluation Criterion: Communications with State and local governments within the plume exposure pathway Emergency Planning Zone shall be tested monthly. Communications with Federal emergency response organizations and States within the ingestion pathway shall be tested quarterly. Communications between the nuclear facility, State and local emergency*

operations centers, and field assessment teams shall be tested annually. Communication drills shall also include the aspect of understanding the content of messages.

N.2.a Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions are made in both the State and county plans for the required communications drills.

N.2.a Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part III, Section D

N.2.a Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, states,

“(a) Communications Drills”

“(1) A communications drill with SEMA and counties within the plume EPZ will be conducted monthly to test the adequacy of telephone communications and the ability to understand the content of a message.”

“(2) A communications drill between SEMA and FEMA will be conducted quarterly to test telephone communications and the ability to understand the content of a message.”

“(3) Communications will be tested between the utility, the state, county emergency operations centers and field assessment teams annually to test lines of communications and the ability to understand a message.”

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part III, Section D, states, “Communications links with Callaway Plant and other risk counties will be tested monthly.

Communications testing with Federal agencies is the responsibility of the State. Communications among the Plant, State and other risk county EOCs, and field assessment teams will be tested annually. Communication drills will also include the aspect of understanding the content of messages.”

N.2.b *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

N.2.c **Evaluation Criterion:** *A medical emergency drill involving a simulated contaminated individual which contains provisions for participation by the local support services agencies (i.e., ambulance and offsite medical treatment facility) shall be conducted annually. The offsite portions of the medical drill may be performed as part of the required annual exercise.*

N.2.c Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The State of Missouri, through its State Emergency Management Agency and Department of Health and Senior Services, has assumed responsibility for medical emergency drills and conducts them annually on behalf of the counties and the overall emergency response organization.

N.2.c Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph e

COUNTY PLANS References:

- N/A

N.2.c Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph e, states “A medical emergency drill involving a simulated contaminated individual which contains provisions for participation by the local support services agencies (ambulance and primary/backup hospital) shall be conducted annually.”

COUNTY PLANS Contents:

N/A

- N.2.d Evaluation Criterion:** *Plant environs and radiological monitoring drills (onsite and offsite) shall be conducted annually. These drills shall include collection and analysis of all sample media (e.g., water, vegetation, soil and air), and provisions for communications and record keeping. The State drills need not be at each site. Where appropriate, local organizations shall participate.*

N.2.d Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions for radiological monitoring drills are contained in both the State and county plans.

N.2.d Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph c

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part III, Section E

N.2.d Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph c, states, “Radiological monitoring drills shall be conducted annually to test the ability to collect all sample media. There will also be provisions to test communications and record keeping.”

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part III, Section E, states, “Because field radiological monitoring and sampling is a responsibility of the State, the County’s participation in annual radiological monitoring drills will be limited to communications and recordkeeping.”

N.2.e.1 Evaluation Criterion: *Health Physics drills shall be conducted semi-annually which involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment. The State drills need not be at each site.*

N.2.e.1 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions are made in the State plan for semi-annual health physics drills. This criterion is not applicable to the counties.

N.2.e.1 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph b

COUNTY PLANS References:

- N/A

N.2.e.1 Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph b, states “Health physics drills shall be conducted semiannually which involve response to, and analysis of, simulated airborne and liquid samples and direct radiation measurements in the environment.”

COUNTY PLANS Contents:

N/A

N.2.e.2 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

N.3 *Each organization shall describe how exercises and drills are to be carried out to allow free play for decision-making and to meet the following objectives. Pending the development of exercise scenarios and exercise evaluation guidance by NRC and FEMA the scenarios for use in exercises and drills shall include but not be limited to, the following:*

N.3.a Evaluation Criterion: *The basic objective(s) of each drill and exercise and appropriate evaluation criteria;*

N.3.a Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions are made to ensure that the basic objective(s) and related evaluation criteria are provided.

N.3.a Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part II

N.3.a Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d, states, “An emergency exercise will be conducted biennially in accordance with a prepared scenario. The scenario, designed to test the achievement of the training objectives outlined above, will be developed jointly by the utility, the DHSS, SEMA, and local response organizations. Scenarios shall include (a) basic objectives of the exercise, (b) date, time period, place, and participating organizations, (c) simulated events, (d) time schedule of real and simulated initiating events, (e) narrative summary describing the conduct of the exercise, and (f) arrangements for qualified observers. The SEMA will assist with coordination of the preparation and the conduct of such exercises. A description of (a), (b), (c), (d), (e) and (f) above will be provided to FEMA Region VII in accordance with current guidance.”

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part II contains a detailed description of the county exercise program.

N.3.b Evaluation Criterion: *The date(s), time period, place(s) and participating organizations;*

N.3.b Statement:

The FEMA review found the plans addressing this criterion to be adequate.

This criterion is detailed in both the State and county plans.

N.3.b Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph b

N.3.b Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d, states, “An emergency exercise will be conducted biennially in accordance with a prepared scenario. The scenario, designed to test the achievement of the training objectives outlined above, will be developed jointly by the utility, the DHSS, SEMA, and local response organizations. Scenarios shall include (a) basic objectives of the exercise, (b) date, time period, place, and participating organizations, (c) simulated events, (d) time schedule of real and simulated initiating events, (e) narrative summary describing the conduct of the exercise, and (f) arrangements for qualified observers. The SEMA will assist with coordination of the preparation and the conduct of such exercises. A description of (a), (b), (c), (d), (e) and (f) above will be provided to FEMA Region VII in accordance with current guidance.”

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph b, states, “Exercise scenarios will include participation of all or specific parts of response organizations, including State, County and Federal Organizations. 1. The scenarios will be designed to foster decision-making, and will include: ...The date, time period, place and participating organizations.”

N.3.c Evaluation Criterion: *The simulated events;*

N.3.c Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provision is made for a clear statement of simulated events in exercise documentation.

N.3.c Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph c

N.3.c Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d, states, “An emergency exercise will be conducted biennially in accordance with a prepared scenario. The scenario, designed to test the achievement of the training objectives outlined above, will be developed jointly by the utility, the DHSS, SEMA, and local response organizations. Scenarios shall include (a) basic objectives of the exercise, (b) date, time period, place, and participating organizations, (c) simulated events, (d) time schedule of real and simulated initiating events, (e) narrative summary describing the conduct of the exercise, and (f) arrangements for qualified observers. The SEMA will assist with coordination of the preparation and the conduct of such exercises. A description of (a), (b), (c), (d), (e) and (f) above will be provided to FEMA Region VII in accordance with current guidance.”

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph c, addresses this criterion adequately.

N.3.d Evaluation Criterion: *A time schedule of real and simulated initiating events;*

N.3.d Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The specific language of this criterion is provided in both the State and county plans.

N.3.d Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph d

N.3.d Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d, states, “An emergency exercise will be conducted biennially in accordance with a prepared scenario. The scenario, designed to test the achievement of the training objectives outlined above, will be developed jointly by the utility, the DHSS, SEMA, and local response organizations. Scenarios shall include (a) basic objectives of the exercise, (b) date, time period, place, and participating organizations, (c) simulated events, (d) time schedule of real and simulated initiating events, (e) narrative summary describing the conduct of the exercise, and (f) arrangements for qualified observers. The SEMA will assist with coordination of the preparation and the conduct of such exercises. A description of (a), (b), (c), (d), (e) and (f) above will be provided to FEMA Region VII in accordance with current guidance.”

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph d, specifically addresses this criterion.

N.3.e Evaluation Criterion: *A narrative summary describing the conduct of the exercises or drills to include such things as simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities; and*

N.3.e Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions for meeting this criterion are within both the State and county plans.

N.3.e Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph e

N.3.e Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d, states, “An emergency exercise will be conducted biennially in accordance with a prepared scenario. The scenario, designed to test the achievement of the training objectives outlined above, will be developed jointly by the utility, the DHSS, SEMA, and local response organizations. Scenarios shall include (a) basic objectives of the exercise, (b) date, time period, place, and participating organizations, (c) simulated events, (d) time schedule of real and simulated initiating events, (e) narrative summary describing the conduct of the exercise, and (f) arrangements for qualified observers. The SEMA will assist with coordination of the preparation and the conduct of such exercises. A description of (a), (b), (c), (d), (e) and (f) above will be provided to FEMA Region VII in accordance with current guidance.”

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph e, specifically addresses this criterion.

N.3.f Evaluation Criterion: *A description of the arrangements for and advance materials to be provided to official observers.*

N.3.f Statement:

The FEMA review found the plans addressing this criterion to be adequate.

This criterion is adequately addressed by specific language in both the State and county plans.

N.3.f Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph f

N.3.f Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 2, paragraph d, states, “An emergency exercise will be conducted biennially in accordance with a prepared scenario. The scenario, designed to test the achievement of the training objectives outlined above, will be developed jointly by the utility, the DHSS, SEMA, and local response organizations. Scenarios shall include (a) basic objectives of the exercise, (b) date, time period, place, and participating organizations, (c) simulated events, (d) time schedule of real and simulated initiating events, (e) narrative summary describing the conduct of the exercise, and (f) arrangements for qualified observers. The SEMA will assist with coordination of the preparation and the conduct of such exercises. A description of (a), (b), (c), (d), (e) and (f) above will be provided to FEMA Region VII in accordance with current guidance.”

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part II, Section D, subsection 1, paragraph f, specifically addresses this criterion.

N.4 Evaluation Criterion: *Official observers from Federal, State or local governments will observe, evaluate, and critique the required exercises. A critique shall be scheduled at the conclusion of the exercise to evaluate the ability of organizations to respond as called for in the plan. The critique shall be conducted as soon as practicable after the exercise, and a formal evaluation should result from the critique.*

N.4 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The requirements of this criterion were met by specific provisions of the State and county plans.

N.4 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *State Emergency Management Agency SOP*, Part II, Section D, subsection 2

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Part II, Section E

N.4 Plan Contents:

MONAP Contents:

Annex A, *State Emergency Management Agency SOP*, Part II, Section D, subsection 2, states (in part), "...The organization shall provide for critique of the biennial exercise by federal and state observers/evaluators as soon as practicable after the exercise."

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part II, Section E, states, "Applicable personnel from the State Emergency Management Agency and representatives of FEMA Region VII will be requested to observe the exercise and participate in a critique. The critique will include an evaluation based upon standard FEMA exercise evaluation methodology and an assessment of the ability of each participating organization to respond as called for in this Plan. The critique will be documented."

N.5 Evaluation Criterion: *Each organization shall establish means for evaluating observer and participant comments on areas needing improvement, including emergency plan procedural changes, and for assigning responsibility for implementing corrective actions. Each organization shall establish management control used to ensure that corrective actions are implemented.*

N.5 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions for the incorporation of observer and participant comments, including emergency procedural changes and assigning responsibility for corrective actions are within both the State and county plans.

N.5 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part IV, *Corrective Actions*

COUNTY PLANS References:

- Annex M, *Exercises and Drills*, Parts A and B
- Annex M, *Exercises and Drills*, Part II, Section F

N.5 Plan Contents:

MONAP Contents:

Annex E, Part IV, *Corrective Actions*, states, “Plan revisions may be necessary as the result of conducting drills, exercises, training sessions and periodic plan review. The Radiological Emergency Planner of the State Emergency Management Agency will receive comments, observations and critiques resulting from all of these. These comments will be presented to the appropriate agency or emergency personnel. After consultation with these individuals, appropriate revisions will be made to plans or procedures to correct any deficiencies. Copies of those pages with corrective changes will be submitted to FEMA Region VII for review and approval. Following FEMA approval appropriate numbers of copies of the changed pages will be provided to all plan holders.”

“The SEMA Director will certify annually to FEMA that the State Plan has been reviewed and updated according to needs identified.”

COUNTY PLANS Contents:

Annex M, *Exercises and Drills*, Part I, *Responsibility*, states:

“A. Emergency Management Director

1. Participate in planning, scheduling and coordinating drills and exercises with the State, other risk counties, and Callaway Plant.
2. Incorporate written changes resulting from exercises and drills into emergency plans and procedures.”

“B. Commissioners

1. Insure that County emergency personnel and equipment respond to and participate in drills and exercises.
2. Insure the correction of deficiencies discovered during exercises and drills.”

Annex M, *Exercises and Drills*, Part II, Section F, states, “Observer and participant comments will be collected by the Emergency Management Director. The comments will be reviewed with the County Commission, and a determination of corrective actions will be made. The Emergency Management Director will incorporate the changes into the plans.”

O. Radiological Emergency Response Training Planning Standard:
Radiological emergency response training is provided to those who may be called on to assist in an emergency.

O.1 Evaluation Criterion: *Each organization shall assure the training of appropriate individuals.*

O.1 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Training for all appropriate emergency response personnel is provided for by the State and county plans.

O.1 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- * Annex E, *Training Programs*, Part III, Section A, subsection 3, paragraph a

COUNTY PLANS References:

- Annex N, *Radiological Emergency Response Training*, Part I, Section A, subsection 1

O.1 Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 3, paragraph a, states, "Under the coordination of the SEMA, state and local response organization personnel will attend training sessions designed to establish proficiency in radiological emergency response to an incident affecting the EPZ and provide for maintenance of response proficiency through appropriate retraining."

This part further identifies those persons identified for training (see below).

COUNTY PLANS Contents:

Annex N, *Radiological Emergency Response Training*, Part I, Section A, specifies that the County Commission ensure that all County response personnel receive adequate training for their assignments.

O.1.a *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

O.1.b **Evaluation Criterion:** *Each offsite response organization shall participate in and receive training. Where mutual aid agreements exist between local agencies such as fire, police and ambulance/ rescue, the training also shall be offered to the other departments who are members of the mutual aid district.*

O.1.b Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The State and county plans identify a wide range of organizations designated to receive training. The listings meet the stated criterion.

O.1.b Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex E, *State Training Matrix*

COUNTY PLANS References:

- Annex N, *Radiological Emergency Response Training*, Part II, Section A, subsection 4

O.1.b Plan Contents:

MONAP Contents:

The cited attachment lists all state agencies identified to receive training.

COUNTY PLANS Contents:

Annex N, *Radiological Emergency Response Training*, Part II, Section A, subsection 4, states, "Personnel who will receive training on radiological emergency response include the following:

- a. Directors or coordinators and staff of the response organizations.
- b. Law enforcement and security personnel, and fire-fighting personnel.
- c. First aid and rescue personnel.
- d. Emergency response personnel.
- e. Medical support personnel.
- f. Communications personnel."

County response organizations report that mutual aid organizations are routinely invited to participate in all training programs.

O.2 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

O.3 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

O.4 ***Each organization shall establish a training program for instructing and qualifying personnel who will implement radiological emergency response plans. The specialized initial training and periodic retraining programs (including the scope, nature and frequency) shall be provided in the following categories:***

O.4.a **Evaluation Criterion: *Directors or coordinators of the response organizations;***

O.4.a Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Training for directors or coordinators of the response agencies is specified.

O.4.a Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex E, *State Training Matrix*

COUNTY PLANS References:

- Annex N, *Radiological Emergency Response Training*, Part II, Section A, subsection 4

O.4.a Plan Contents:

MONAP Contents:

The specified persons/agencies are identified in the cited reference.

COUNTY PLANS Contents:

The specified persons/agencies are identified in the cited reference.

O.4.b Evaluation Criterion: *Personnel responsible for accident assessment;*

O.4.b Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions for the training of accident assessment personnel are made.

O.4.b Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex E, *State Training Matrix*

COUNTY PLANS References:

- Not applicable to county organizations

O.4.b Plan Contents:

MONAP Contents:

The specified persons/agencies are identified in the cited reference.

COUNTY PLANS Contents:

N/A

O.4.c Evaluation Criterion: *Radiological monitoring teams and radiological analysis personnel;*

O.4.c Statement:

The FEMA review found the plans addressing this criterion to be adequate.

State training is provided for personnel on radiological monitoring teams and/or assigned to radiological analysis.

O.4.c Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex E, *State Training Matrix*

COUNTY PLANS References:

- Not applicable to county jurisdictions

O.4.c Plan Contents:

MONAP Contents:

The specified persons/agencies are identified in the cited reference.

COUNTY PLANS Contents:

N/A

O.4.d Evaluation Criterion: *police, security and firefighting personnel;*

O.4.d Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Training for police, security and firefighting personnel is provided by the counties.

O.4.d Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Training of these responders is a county responsibility.

COUNTY PLANS References:

- Annex N, *Radiological Emergency Response Training*, Part II, Section A, subsection 4

O.4.d Plan Contents:

MONAP Contents:

N/A

COUNTY PLANS Contents:

The specified persons/agencies are identified in the cited reference.

O.4.e *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

O.4.f Evaluation Criterion: *first aid and rescue personnel;*

O.4.f Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Training for first aid and rescue personnel is provided by both the State and the counties.

O.4.f Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex E, *State Training Matrix*

COUNTY PLANS References:

- Annex N, *Radiological Emergency Response Training*, Part II, Section A, subsection 4

O.4.f Plan Contents:

MONAP Contents:

The specified persons/agencies are identified in the cited reference.

COUNTY PLANS Contents:

The specified persons/agencies are identified in the cited reference.

O.4.g Evaluation Criterion: *local support services personnel including civil defense/emergency services personnel;*

O.4.g Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Training for local support personnel including civil defense/emergency services personnel;

O.4.g Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex E, *State Training Matrix*

COUNTY PLANS References:

- Annex N, *Radiological Emergency Response Training*, Part II, Section A, subsection 4

O.4.g Plan Contents:

MONAP Contents:

The specified persons/agencies are identified in the cited reference.

COUNTY PLANS Contents:

The specified persons/agencies are identified in the cited reference.

O.4.h Evaluation Criterion: *medical support personnel*;

O.4.h Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Training for medical support personnel at Callaway Community Hospital and the University of Missouri-Columbia Medical Center and Clinics is provided by the State.

O.4.h Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex E, *State Training Matrix*

COUNTY PLANS References:

- This criterion is not a county responsibility in Missouri.

O.4.h Plan Contents:

MONAP Contents:

The specified persons/agencies are identified in the cited reference.

COUNTY PLANS Contents:

N/A

O.4.i *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

O.4.j **Evaluation Criterion:** *personnel responsible for transmission of emergency information and instructions.*

O.4.j Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Training for communications personnel is provided by the State and by the counties.

O.4.j Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Attachment 1 to Annex E, *State Training Matrix*

COUNTY PLANS References:

- Annex N, *Radiological Emergency Response Training*, Part II, Section A, subsection 4

O.4.j Plan Contents:

MONAP Contents:

The specified persons/agencies are identified in the cited reference.

COUNTY PLANS Contents:

The specified persons/agencies are identified in the cited reference.

O.5 **Evaluation Criterion:** *Each organization shall provide for the initial and annual retraining of personnel with emergency response responsibilities.*

O.5 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provision for the initial training and annual retraining of emergency response

personnel is made by both the State and county jurisdictions.

O.5 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *State Training Programs*, Part III, Section A, subsection 1, paragraph 3.b.1

COUNTY PLANS References:

- Annex N, *Radiological Emergency Response Training*, Part III, *Retraining*

O.5 Plan Contents:

MONAP Contents:

Annex E, *State Training Programs*, Part III, Section A, subsection 1, paragraph 3.b.1 states, “The radiological emergency response-training program is designed to provide adequate training to assist state and local responders in performing their specific responsibilities and tasks as outlined in the plan. State responders will be offered initial and annual refresher training as indicated on the State Training Matrix.”

COUNTY PLANS Contents:

Annex N, *Radiological Emergency Response Training*, Part III, *Retraining*, states, “After the initial training program, retraining of personnel will be offered on an annual basis. The scope of the annual retraining programs will be essentially the same as the initial program, with updates as needed when new material, equipment, or techniques are adopted.”

P. Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans Planning Standard: *Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.*

P.1 Evaluation Criterion: *Each organization shall provide for the training of individuals responsible for the planning effort.*

P.1 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Training for personnel developing and maintaining the emergency response plans is provided at the State and county levels.

P.1 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex E, *Training Programs*, Part III, Section A, subsection 3, paragraph b.3

COUNTY PLANS References:

- Annex N, *Radiological Emergency Response Training*, Part I, Section B, subsection 1.d

P.1 Plan Contents:

MONAP Contents:

Annex E, *Training Programs*, Part III, Section A, subsection 3, paragraph b.3, states, "Training of the emergency planning coordinator, (the person that is responsible for plan development, coordination and update of the plan) is the responsibility of SEMA."

COUNTY PLANS Contents:

Annex N, *Radiological Emergency Response Training*, Part I, Section B, subsection 1.d, states "The State Emergency Management Agency (will) conduct training of individuals responsible for the planning effort."

P.2 Evaluation Criterion: *Each organization shall identify by title the individual with the overall authority and responsibility for radiological emergency*

response planning.

P.2 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The Director of the State Emergency Management Agency and the County Commission have overall authority and responsibility for the radiological emergency response planning at the State and county levels, respectively.

P.2 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *State Emergency Management SOP*, Part III, Section A, subsection 2

COUNTY PLANS References:

- *Basic Plan*, Part VI, Section A, subsection 1

P.2 Plan Contents:

MONAP Contents:

Annex A, *State Emergency Management SOP*, Part III, Section A, subsection 2, states, “The Director of SEMA and his/her deputy ensure the development and updating of state emergency response plans, and assists local jurisdictions to develop local plans for coping with nuclear facility incidents.”

COUNTY PLANS Contents:

The county *Basic Plan*, Part VI, Section A, subsection 1, states, “The County Commission, being responsible for protecting the health, safety and welfare of persons within the jurisdiction, have the overall authority and responsibility for radiological emergency response planning.”

P.3 Evaluation Criterion: *Each organization shall designate an Emergency Planning Coordinator with responsibility for the development and updating of emergency plans and coordination of these plans with other response organizations.*

P.3 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Emergency Planning Coordinator duties are assigned in the State and county plans.

P.3 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *State Emergency Management SOP*, Part III, Section A, subsection 2

COUNTY PLANS References:

- *Basic Plan*, Part VI, Section A, subsection 2

P.3 Plan Contents:

MONAP Contents:

Annex A, *State Emergency Management SOP*, Part III, Section A, subsection 2, states, “The Director of SEMA and his/her deputy ensure the development and updating of state emergency response plans, and assists local jurisdictions to develop local plans for coping with nuclear facility incidents.”

COUNTY PLANS Contents:

The county *Basic Plan*, Part VI, Section A, subsection 2, states, “The County Emergency Management Director is responsible for the development and update of emergency plans and procedures and for coordinating this Plan with Plant, State and other risk County radiological emergency response plans.”

- P.4 Evaluation Criterion:** *Each organization shall update its plan and agreements as needed, review and certify it to be current on an annual basis. The update shall take into account changes identified by drills and exercises.*

P.4 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions to update plans and agreements and take into accounts changes identified in drills and exercises are included in both the State and county plans.

P.4 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Annex A, *State Emergency Management Agency SOP*, Part I, Section K

COUNTY PLANS References:

- *Basic Plan*, Part VI, Section B, subsections 2 and 3

P.4 Plan Contents:

MONAP Contents:

Annex A, *State Emergency Management Agency SOP*, Part I, Section K, states (in part) that the Director of the State Emergency Management Agency “annually certifies to FEMA that the state plan has been reviewed and updated according to needs identified by drills and exercises.”

COUNTY PLANS Contents:

The county *Basic Plan*, Part VI, Section B, subsections 2 and 3, state “On an annual basis, the Emergency Management Director will conduct a formal review of the Plan and update it by incorporating all needed changes. After all plan and procedure changes are identified, they must be submitted to FEMA for Regional Assistance Committee (RAC) review and approval.”

- P.5 Evaluation Criterion:** *The emergency response plans and approved changes to the plans shall be forwarded to all organizations and appropriate individuals with responsibility for implementation of the plans. Revised pages shall be dated and marked to show where changes have been made.*

P.5 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Provisions for distributing updated plans to all organizations and individuals responsible for plan implementation is made in both the State and county plans.

P.5 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Introduction to the Missouri Nuclear Accident Plant*, page ix, item 1

COUNTY PLANS References:

Basic Plan, Part VI, Section B, subsections 2, 3 and 4

P.5 Plan Contents:

MONAP Contents:

The *Introduction to the Missouri Nuclear Accident Plant*, page ix, item 1, states, “Changes (to this plan) will be distributed as developed. All revised pages will be dated and marked to show when and where changes have been made. Copies maybe electronic or hard copy depending on recipient preference.”

COUNTY PLANS Contents:

The county *Basic Plan*, Part VI, Section B, subsections 2, 3 and 4, state, “On an annual basis, the Emergency Management Director will conduct a formal review of the Plan and update it by incorporating all needed changes. After all plan and procedure changes are identified, they must be submitted to FEMA for Regional Assistance Committee (RAC) review and approval. When approved by the RAC, changes will be distributed to all plan holders for incorporation within county plans and procedures.”

A review of plans on file reveals that all have been change-marked.

P.6 Evaluation Criterion: *Each plan shall contain a detailed listing of supporting plans and their source.*

P.6 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Supporting plans and documents are identified and their sources listed in both the State and county plans.

P.6 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Bibliography*, page xv

COUNTY PLANS References:

- Appendix 5, *List of Supporting Documents*

P.6 Plan Contents:

MONAP Contents:

The *Bibliography* at page xv lists supporting plans and their sources.

COUNTY PLANS Contents:

Appendix 5 lists all supporting plans maintained by the county and available at its EOC.

- P.7 Evaluation Criterion:** *Each plan shall contain as an appendix listing, by title, procedures required to implement the plan. The listing shall include the section(s) of the plan to be implemented by each procedure.*

P.7 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The lists of implementing procedures, with the section(s) of the plan to be implemented by each procedure, are provided in the State and county plans.

P.7 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Page xvii, *Implementing Procedures*

COUNTY PLANS References:

- Appendix 3, *List of Implementing Procedures*

P.7 Plan Contents:

MONAP Contents:

The list of implementing procedures is provided at the above-cited location within the plan.

COUNTY PLANS Contents:

The list of implementing procedures is provided at the above-cited location within the plan.

P.8 Evaluation Criterion: *Each plan shall contain a specific table of contents. Plans submitted for review should be cross-referenced to these criteria.*

P.8 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

Tables of contents are provided in both the State and county plans.

P.8 (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk): (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- *Missouri Nuclear Accident Plan Table of Contents*, pp. iii - viii

COUNTY PLANS References:

- *Table of Contents*, pages i and ii

P.8 Plan Contents:

MONAP Contents:

The required table of contents is located as cited above.

COUNTY PLANS Contents:

The required table of contents is located as cited above.

P.9 *Per NUREG-0654, Revision 1, this criterion is a licensee responsibility.*

P.10 Evaluation Criterion: *Each organization shall provide for updating telephone numbers in emergency procedures at least quarterly.*

P.10 Statement:

The FEMA review found the plans addressing this criterion to be adequate.

The requirement that listings of emergency telephone numbers are updated at least quarterly is stated in both the State and county plans.

P.10 Plan References (references not listed in the NUREG-0654 Cross Reference are marked with an asterisk):

MONAP References:

- Appendix 6, *Emergency Telephone Numbers*, page 6-5

COUNTY PLANS References:

- *Basic Plan*, Part VI, Section B, Part 5

P.10 Plan Contents:

MONAP Contents:

A statement on page 6-5 of Appendix 6 states, “Telephone numbers contained in this Appendix shall be updated quarterly.”

COUNTY PLANS Contents:

The *Basic Plan*, Part VI, Section B, Part 5, states, “Telephone numbers in emergency procedures shall be updated at least quarterly.”

III. Post COL Reasonable Assurance Tracking

Post COL Reasonable Assurance Tracking is a process by which efforts to address incomplete or missing planning elements required by NUREG-0654 FEMA-REP-1 criteria can be scheduled and tracked. No incomplete or missing elements were found in review of the Radiological Emergency Response Plans for the Callaway plant.

IV. Criterion Rating Summary

Criterion	Rating	Criterion	Rating	Criterion	Rating
A.1.a	Adequate	H.3	Adequate	M.3	Adequate
A.1.b	Adequate	H.4	Adequate	M.4	Adequate
A.1.c	Adequate	H.7	Adequate	N.1.a	Adequate
A.1.d	Adequate	H.10	Adequate	N.1.b	Adequate
A.1.e	Adeq-Corr	H.11	Adequate	N.2.a	Adequate
A.2.a	Adequate	H.12	Adequate	N.2.c	Adequate
A.2.b	Adequate	I.7	Adequate	N.2.d	Adequate
A.3	Adequate	I.8	Adequate	N.2.e (1)	Adequate
A.4	Adequate	I.9	Adequate	N.3.a	Adequate
C.1.a	Adequate	I.10	Adequate	N.3.b	Adequate
C.1.b	Adequate	I.11	Adequate	N.3.c	Adequate
C.1.c	Adequate	J.2	Adequate	N.3.d	Adequate
C.2.a	Adequate	J.9	Adequate	N.3.e	Adequate
C.3	Adequate	J.10.a	Adequate	N.3.f	Adequate
C.4	Adequate	J.10.b	Adequate	N.4	Adequate
D.3	Adequate	J.10.c	Adequate	N.5	Adequate
D.4	Adequate	J.10.d	Adequate	O.1	Adequate
E.1	Adequate	J.10.e	Adequate	O.1.b	Adequate
E.2	Adequate	J.10.f	Adequate	O.4.a	Adequate
E.5	Adequate	J.10.h	Adequate	O.4.b	Adequate
E.6	Adequate	J.10.i	Adequate	O.4.c	Adequate
E.7	Adequate	J.10.j	Adequate	O.4.d	Adequate
F.1.a	Adequate	J.10.k	Adequate	O.4.f	Adequate
F.1.b	Adequate	J.10.l	Adequate	O.4.g	Adequate
F.1.c	Adequate	J.10.m	Adequate	O.4.h	Adequate
F.1.d	Adequate	J.11	Adequate	O.4.j	Adequate
F.1.e	Adequate	J.12	Adequate	O.5	Adequate
F.2	Adequate	K.3.a	Adequate	P.1	Adequate
F.3	Adequate	K.3.b	Adequate	P.2	Adequate
G.1	Adequate	K.4	Adequate	P.3	Adequate
G.2	Adequate	K.5.a	Adequate	P.4	Adequate
G.3.a	Adequate	K.5.b	Adequate	P.5	Adequate
G.3.b	Adequate	L.1	Adequate	P.6	Adequate
G.4.a	Adequate	L.3	Adequate	P.7	Adequate

G.4.b	Adequate	L.4	Adequate	P.8	Adequate
G.4.c	Adequate	M.1	Adequate	P.10	Adequate
G.5	Adequate				

V. Reasonable Assurance

The plans cited and evaluated herein are adequate when measured against the standards and criteria of NUREG-0654 FEMA-REP-1, Revision 1, and, pending a demonstration through an exercise of their applicability to the proposed new nuclear plant at Callaway, it is found that there is reasonable assurance that these plans can be implemented.

VI. Acronyms

The following acronyms may appear in this report and the referenced plans:

ACRS	Advisory Committee on Reactor Safety
AG	Missouri Adjutant General
AGRI	Department of Agriculture
BWR	Boiling Water Reactor
CANS	Community Alert & Notification System
CDE	Committed Dose Equivalent
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CNPP	Callaway Nuclear Power Plant
COL	Combined License Application
DEQ	Division of Environmental Quality
DHS	U.S. Department of Homeland Security
DHSS	Dept. of Health and Senior Services/Section for Environmental Public Health
DNR	Department of Natural Resources
DOD	Department of Defense (Federal)
DOE	Department of Energy (Federal)
EAL	Emergency Action Level
EAS	Emergency Alert System
ECC	Emergency Communications Center
ECCS	Emergency Core Cooling System
ECL	Emergency Classification Level
EOC	Emergency Operations Center
EPA	Environmental Protection Agency (Federal)
EPZ	Emergency Planning Zone
FCP	Forward Command Post
FDA	Food and Drug Administration (Federal)
FEMA	Federal Emergency Management Agency
FNS	Federal Nutrition Service
FR	Federal Register
FRDC	Fulton Reception and Diagnostic Center
FRMAP	Federal Radiological Monitoring and Assessment Plan

FSD	Family Support Division
HHS	Health and Human Services
HQ	Headquarters
IFR	Interim Findings Report
IPZ	Ingestion Pathway Zone
JIC	Joint Information Center
JPIC	Joint Public Information Center (also 'JIC')
KI	Potassium Iodide
LOA	Letter of Agreement
LOCA	Loss of Coolant Accident
LSP	Laboratory Services Program
MoDOT	Missouri Department of Transportation
MoNAP	Missouri Nuclear Accident Plan
MoRET	Missouri Radiological Emergency Team
MOU	Memorandum of Understanding
MSIV	Main Steam Isolation Valve
NCL	Notification Coordination Line
NRC	Nuclear Regulatory Commission (Federal)
NRO	New Reactor Officer
NUREG	Nuclear Regulations
OBE	Operating Basis Earthquake
ORO	Offsite Response Organization
OSL	Optically Stimulated Luminescent Dosimetry
PAG	Protective Action Guide
PDW	Public Drinking Water
PM	Project Manager
POA&M	Plan of Action and Milestones
PSER	Preliminary Safety Evaluation Report
PWR	Pressurized Water Reactor
RA	Regional Administrators
RADCO	Radiation Control Teams
RAI	Request for Additional Information
RCC	Reception and Care Center
REP	Radiological Emergency Preparedness
REPP	Radiological Emergency Preparedness Program
RERP	Radiological Emergency Response Plans
RHR	Residual Heat Removal System
RRAC	Radiological Regional Assistance Committee
SEMA	State Emergency Management Agency (Missouri)
SEOC	State Emergency Operations Center
SER	Safety Evaluation Report
SOP	Standard Operating Procedures
TBD	To Be Determined
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter (replaced by OSL –see OSL)
USDA	United States Department of Agriculture (Federal)