Kadlec Medical Center MS-1 Drill Report

Washington Nuclear Plant No. 2 (WNP-2)

Licensee: **Washington Public Power Supply System**

Exercise Date: **April 29, 1999**

Report Date: **May 28, 1999**

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION X
130 228th Street, SW
Bothell, WA 98021-9796

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I. EXECUTIVE SUMMARY

This drill was conducted on April 29, 1999, to demonstrate the capability of the Kadlec Medical Center and the Richland Fire and Emergency Services to respond to a radiological incident at Washington Nuclear Plant No. 2 (WNP-2). This was the third Kadlec Medical Center drill in the third 6-year exercise cycle for WNP-2. Previous MS-1 Drills (Medical Services) were conducted with these organizations on September 11, 1997; April 27, 1995; June 30, 1993; August 29, 1991; and May 17, 1989.

The Federal Emergency Management Agency (FEMA) issued Guidance Memorandum (GM) MS-1, which describes planning and preparedness for medical transport and medical services. FEMA's review criteria for medical services are also contained in GM MS-1, and Exercise Manuals REP-14 and REP-15. FEMA guidance requires the Offsite Response Organizations (ORO) to arrange for local and backup hospital and medical services with the capability of evaluating patients with radiation exposure and contamination, while maintaining radiological contamination control measures.

The State of Washington has agreements with three hospitals near WNP-2 for treating patients with radiological exposure or contamination: Our Lady of Lourdes Hospital (Pasco), Kennewick General Hospital (Kennewick), and Kadlec Medical Center (Richland). Kadlec Medical Center is designated as the primary facility for treating patients with radiological exposure or contamination. The State of Washington's Fixed Nuclear Facility (FNF) Emergency Response Plan assigns the responsibility to the Plume Emergency Planning Zone (EPZ) organizations to make arrangements for medical transport (ambulance service) of injured and/or contaminated persons. For the WNP-2 site, Benton and Franklin Counties have assigned ambulance services to the Fire Departments of Pasco, Kennewick, and Richland; Benton Fire Districts No. 1 and No. 4; and Franklin Fire Districts No. 3 and No. 4.

Each MS-1 designated hospital and ambulance services must demonstrate their preparedness at least every other year in a drill evaluated by FEMA. And, at least one MS-1 Drill is required annually for each Nuclear Power Plant site.

Richland Fire and Emergency Services and Kadlec Medical Center demonstrated knowledge of their emergency response plans and procedures and adequately implemented them in the MS-1 Drill on April 29, 1999. There were no previous Areas Requiring Corrective Action (ARCA) to be demonstrated and no new ARCAs or Drill Deficiencies were identified as a result of this drill.

II. INTRODUCTION

Following the accident at the Three Mile Island Nuclear Station in March of 1979, the President directed FEMA to assume the lead responsibility for all offsite nuclear planning and response. FEMA's Radiological Emergency Preparedness (REP) Program was developed in response to President Carter's Directive of December 7, 1979. The principle guidance for FEMA's REP Program is described in 44 Code of Federal Regulations (CFR) Parts 350, 351 and 352 and NUREG-0654/FEMA REP-1, Revision 1.

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

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

- Taking the lead in offsite emergency planning as well as taking the lead in the review and evaluation of radiological emergency response plans (RERP) and procedures developed by State and local governments;

- Determination of whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the State and local government plans and procedures;

- Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993 (Federal Register, Vol. 58, No. 176, September 14, 1993); and

- Coordinating the activities of other Federal agencies which have responsibilities in the radiological emergency planning process, including the following:

    - U.S. Nuclear Regulatory Commission,
    - U.S. Environmental Protection Agency,
    - U.S. Department of Energy,
    - U.S. Department of Health and Human Services,
    - U.S. Department of Transportation,
    - U.S. Department of Agriculture,
    - U.S. Department of the Interior, and
    - U.S. Food and Drug Administration.

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

The following plans and procedures were submitted to FEMA by the participating agencies as their "plan of record" for the MS-1 Drill. FEMA used these plans and procedures in evaluating the performance of the participants:

- Kadlec Medical Center Standard Operating Procedures: Procedure for the Care of Radiation Accident Patients at Kadlec Hospital, Richland, WA, Revision 8, dated February 1995.

- Richland Fire Department Standard Operating Procedures: Section K – Emergency Medical Procedures – Casualty Handling in Radiation Accidents, dated July 25, 1994.

The drill was conducted in accordance with the Extent of Play Agreement and Drill Scenario. The scenario presented a hypothetical radiological accident at SIEMENS Power Corporation, which manufactures fuel rods for nuclear power plants. The SIEMENS facility is within the 10-mile EPZ of WNP-2 and the "patient" was to sustain radiological contamination, as well as other injuries. Therefore, the scenario triggered the same response that the participating MS-1 Organizations would provide for a WNP-2 emergency. The Extent of Play Agreement between FEMA and the OROs determines the manner in which a particular response function will be demonstrated by the players. The agreement is designed to test the capability of the plans and procedures to be implemented under simulated emergency conditions. Where no Extent of Play Agreement existed, FEMA evaluated the observed activities as if the plans and procedures were to be followed in their entirety.

The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the FEMA Region X RAC Chairperson, and approved by the Regional Director.

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

- FEMA Rule 44 CFR 350.5;

- FEMA/NRC document NUREG-0654/FEMA-REP-1, Rev. 1, Planning Standard "L" "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;

- FEMA-REP-14, "Radiological Emergency Preparedness Exercise Manual," September 1991;

- FEMA-REP-15, "Radiological Emergency Preparedness Exercise Evaluation Methodology," September 1991;

- NRC Rule 10 CFR 50.47(b)(12);

- NRC policy statement "Emergency Planning-Medical Services" (51 FR 32904); and those expected actions called for by the plans and procedures of the participants.

Section III of this report, entitled "Drill Overview," presents basic information and data relevant to the drill.

Section IV, "Drill Evaluation and Results," presents detailed information on the demonstration of applicable drill objectives at each jurisdiction or functional entity evaluated in a jurisdiction-based format.

III. DRILL OVERVIEW

This section contains the basic information relevant to the April 29, 1999, drill, which tested the offsite emergency response capabilities in the area surrounding WNP-2. This section of the drill report includes a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional entities which were evaluated, as well as a tabular presentation of the time key exercise events and activities occurred.

A. Plume Emergency Planning Zone Description

WNP-2 is located at the Northeast corner of the U.S. Department of Energy's (DOE) Hanford Reservation. It is about ten miles north of the city of Richland and three miles west of the Columbia River. WNP-2 is a boiling water reactor with a turbine generator rated at 1,230 megawatts (peak gross). It is operated by the Washington Public Power Supply System, referred to as the Supply System hereafter in this report.

The topography of the ten-mile EPZ is relatively flat except for a range of hills southwest of the site and bluffs and rolling hills west and north of the site along the Columbia River. The land is arid and desert-like except where it is irrigated.

The total resident population of the ten-mile EPZ is estimated at 3,044. Only about 858 of these residents live in Benton County where WNP-2 is located. The other 2,186 residents live across the Columbia River in Franklin County. There are no residents within three miles of the site.

The transient population of the ten-mile EPZ could total 14,945 depending on the time of the year. This estimate is comprised of: 7,926 industrial employees, mostly in Benton County, 4,244 migrant farm workers, mostly in Franklin County, and 2,775 recreationists, mostly along the east bank of the Columbia River and at the Off-Road Vehicle Park on the southern edge of the EPZ.

The land use within the Benton County portion of the EPZ is predominantly vacant except for scattered industrial sites, recreational sites, and some residents on the southern edge of the EPZ. The land use within the Franklin County portion of the EPZ is predominantly diversified agricultural production facilitated by irrigation. There are six recreation areas within the EPZ: Horn Rapids Park, Horn Rapids Off-Road Vehicle Park and Rattlesnake Mountain Shooting Facility in Benton County; the Wahluke Hunting areas and Ringold Fishing Area in Franklin County; and the Columbia River.

B. Drill Participants

The following agencies, organizations, and units of government participated in the MS-1 Drill on April 29, 1999.

- Kadlec Medical Center, Richland, Washington
- Richland Fire and Emergency Services, Richland, Washington

C. Drill Timeline

Local Time	Elapsed Time	
0847	00:00	Evaluator in place. Controller initiated play.
0849	00:02	Notifications completed and ambulance en route.
0915	00:28	Approximate time field demonstration was completed. Patient transport began.
0922	00:35	Approximate time patient arrived at the Emergency Room.
0934	00:47	Approximate time Emergency Room contamination control areas established.
1040	01:53	Approximate time Emergency Room demonstration was completed.
1400		Critique and comments.

IV. DRILL EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities which participated in the April 29, 1999, drill. The purpose of the drill was to test the offsite emergency response capabilities of State and local governments in the 10-mile EPZ surrounding WNP-2.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria delineated in exercise objectives contained in FEMA-REP-14, REP Exercise Manual, September 1991. Detailed information on the exercise objectives and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

A. Status of Jurisdictions Evaluated

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

- **Met** – Listing of the demonstrated exercise objectives under which no Deficiencies or ARCAs were assessed during this drill and under which no ARCAs assessed during prior drills remain unresolved.

- **Deficiency** – Listing of the demonstrated exercise objectives under which one or more Deficiencies was assessed during this drill. Included is a description of each Deficiency and recommended corrective actions.

- **Area Requiring Corrective Actions** – Listing of the demonstrated exercise objectives under which one or more ARCAs were assessed during the current drill or ARCAs assessed during prior drills remain unresolved. Included is a description of the ARCAs assessed during this drill and the recommended corrective action to be demonstrated before or during the next drill for these jurisdictions.

- **Not Demonstrated** – Listing of the exercise objectives not demonstrated as scheduled during this drill, and the reason they were not demonstrated.

- **Prior ARCAs – Resolved** – Descriptions of ARCAs assessed during previous drills that were resolved in this drill, and the corrective actions demonstrated.

- **Prior ARCAs – Unresolved** – Descriptions of ARCAs assessed during prior drills that were not resolved in this drill. Included is the reason the ARCA remains unresolved, and recommended corrective actions to be demonstrated before or during the next drill for these jurisdictions.

The following are definitions of the two types of exercise issues that are discussed in this report.

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

- An **ARCA** is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety."

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

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

- **Plant Site Identifier** – A two-digit number corresponding to the Utility Billable Plant Site Codes.

- **Exercise Year** – The last two digits of the year the exercise was conducted.

- **Objective Number** – A two-digit number corresponding to the objective numbers in FEMA-REP-14.

- **Issue Classification Identifier** – (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports.

- **Exercise Issue Identification Number** – A separate two-digit indexing number assigned to each issue identified in the exercise.

1. **KADLEC MEDICAL CENTER** – This facility is located at 888 Swift Boulevard, Richland, Washington.

a. **MET:** Objectives 5 and 21

The Emergency Room (ER) staff of the Kadlec Medical Center received clear and precise information from Medic 71 of the Richland Fire and Emergency Services Department about their notification and response to an incident at SIEMENS Power Corporation. The ER staff documented each call. When it was determined a patient contaminated with radioactive material would be brought to the medical center, appropriate staff notifications were made immediately.

Thermoluminescent dosimeters (TLDs) were issued to the ER staff and pertinent information was recorded on a "Emergency Worker Exposure Form." The staff was aware the TLDs were to be given to the Supply System Health Physics Technician (HPT) at the end of the mission. The capability to continuously monitor and control radiation exposure to emergency workers was demonstrated.

The ER was notified that the estimated time of arrival (ETA) for the ambulance was 0925. The Medical Center staff then expedited preparation of the Radiation Emergency Area (REA). When the ambulance arrived, the patient was held on-board until preparation of the REA was completed.

Richland Fire and Emergency Services Department personnel briefed the Physician-in-Charge and the nurses on the patient's condition. Transfer from the ambulance gurney to the hospital gurney was made at the REA entrance. The SIEMENS' Health and Safety Technician (HST) had arrived with the patient and immediately began assisting inside the REA. A Supply System HPT arrived and he and a nurse provided supported from outside the REA.

Decontamination of the patient was initiated. Since it was alpha contamination, swabs moistened with saline solution were used to control airborne activity. Throughout the decontamination process the nurses, the work area, and the patient were constantly monitored with an alpha probe. This monitoring was accomplished in an acceptable manner.

After the patient was stabilized, decontaminated, and monitored, she was transferred to a clean gurney and removed from the REA. The two nurses in the REA placed their protective clothing in labeled plastic bags and were monitored as they exited the REA. The HST described the procedure for cleanup and monitoring of the REA.

Even though the normal ER procedures were complicated by a mass-casualty exercise and a radiological drill the same morning, the Medical Center staff functioned as a first class team. We commended the staff for the exceptional expertise, efficiency, and innovation they demonstrated in the drill.

All activities described in the demonstration criteria for Objectives 5 and 21 were carried out in accordance with the plans, unless deviations were provided for in the Extent-of-Play Agreement.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

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

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

TABLE 1. Significant Events Log – Kadlec Medical Center

TIME	COMMENT/DESCRIPTION
0846	Kadlec Medical Center Nurse receives call that SIEMENS Power Corporation has had an explosion and Richland Fire and Emergency Services Department Ambulance is en route to scene. (Medic 71 call) Radiation Emergency Notification Report form completed.
0848	Medic 71 again calls notifying Kadlec they have been advised of one known injury at SIEMENS' facility. Ambulance still en route.
0854	Medic 71 calls in Code Yellow Release, one victim contaminated with radioactive material.
0903	Phone Call from Ambulance. Arriving at scene.
0904	ER Secretary advised to begin Radiation Accident Notification Checklist calls.
0909	Environmental Services Facilities' staff arrived in ER. The Decontamination Cart was brought to the Radiation Emergency Area (REA). Set-up of the REA is started.
0913	Controller advises Supply System HPT to report to Kadlec Medical Center
0914	Phone call from Ambulance. Estimated Time of Arrival (ETA) 0925.
0922	Ambulance arrives, advised to hold patient in ambulance until ERA ready for contaminated patient.
0924	Notification calls completed.
0934	REA prepared. Ambulance is given the all clear signal to drive up to ER entrance. Patient removed from Richland Fire Department ambulance. Patient brought into ER Decontamination Area. Two Kadlec Medical Center nurses dressed out for duty in ERA. ER staff and ambulance EMTs exchange information on accident and patient's injuries and contamination.
0940	Kadlec Medical Center Physician-in-Charge gave radiation precautionary instructions to nurses and other staff. The SIEMENS' HPT briefs nurses on condition of patient. Announced alpha contaminated only, and patient allergic to penicillin.

TABLE 1. Significant Events Log – Kadlec Medical Center (Continued)

TIME	COMMENT/DESCRIPTION
0942-1020	Patient decontaminated.
0944	Supply System HPT arrives, checks and records dosimetry and assists HPT in REA, but stays outside the roped area.
1020-1032	Patient monitored and prepared for removal from REA.
1032	Patient out of REA
1036	Nurses are monitored-out of REA.
1040	Exercise Terminated.

2. **RICHLAND FIRE AND EMERGENCY SERVICES** - The Richland Fire and Emergency Services is the principal ambulance transportation service for Kadlec Medical Center, Richland, Washington.

a. **MET:** Objectives 5 and 20

This transportation drill was completed on April 29, 1999, in conjunction with the Kadlec Medical Center drill. Richland Fire and Emergency Services, Station 71, was requested to transport an injured patient, possibly contaminated with radioactive material, from SIEMENS Power Corporation to Kadlec Medical Center. An ambulance was immediately dispatched. Copies of Section K, "Emergency Medical Procedures" were available at the fire station and in the ambulance.

The ambulance crew issued themselves a Thermoluminescent dosimeter (TLD) and a 0 to 20 R direct reading dosimeter (DRD). The serial numbers of the dosimeters, the initial reading of the DRDs, and personal information were entered on an Emergency Worker Exposure Form. The ambulance crew was aware of the designated location and individual the TLDs would be turned in to at the end of the mission. The DRDs had been inspected for electrical leakage on April 28, 1999.

Instructions on how to use the DRDs and how often to read them were available and understood by the ambulance crew. The "Pencil Dosimeter Readings" form was completed, as appropriate, at every half-hour.

The ambulance crew was aware of their authorized mission exposure limit and turn-back value. They were aware of the potential need to take Potassium Iodide (KI) for thyroid blocking if isotopes of iodine were present. They were provided with a "Thyro-block" package insert that detailed the reason for taking KI, the recommended dose, and possible side effects. The capability to continuously monitor and control radiation exposure to emergency workers was demonstrated.

When the ambulance crew arrived at the accident location, the SIEMENS Health and Safety Technician (HST) provided a patient status report and verified that the patient had radiological contamination. The HST used a Ludlum Model-12 survey instrument with a JBF500 alpha probe to monitor the patient at the accident location, during transport, and at the Medical Center during treatment and decontamination. The survey instrument was within the calibration period and an operational check had been properly performed prior to use.

The ambulance crew determined that the patient's injuries had been assessed, radiological monitoring had been completed and the patient was properly packaged on a backboard for transport. A clean sheet was placed on the ambulance gurney and then the patient was placed on the gurney and loaded into the ambulance. Prior to loading, the ambulance crew inspected the packaging of the patient and determined that it was adequate to

prevent contamination of themselves and the ambulance. Although the ambulance crew correctly described the procedures for radiological monitoring and patient packaging, they should be required to demonstrate these procedures for the next MS-1 Drill in which Richland Fire and Emergency Services participates.

En route to and from the scene, the ambulance crew maintained contact with Kadlec Medical Center staff via Med Com and cellular telephone. The ambulance crew provided the medical center with the patient's status, including the uranium dioxide contamination, and provided an estimated time of arrival. Proper contamination control procedures were utilized during patient assessment, including using appropriate protective equipment. The ambulance crew was familiar with the route to the Kadlec Medical Center and the patient was delivered without delay.

Upon arrival at the medical center, the ambulance crew provided patient information to the medical staff and assisted in moving the patient into the REA. The ambulance crew was aware of the requirement to remain in the immediate area until they and the ambulance were monitored and released. The monitoring of the ambulance crew and ambulance was described and simulated by the SIEMENS' HST.

All activities described in the demonstration criteria for Objectives 5 and 20 were carried out in accordance with the plan, unless deviations were provided for in the extent-of-play agreement.

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

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

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

TABLE 2. Significant Events Log – Richland Fire and Emergency Services

TIME	COMMENT/DESCRIPTION
0847	Call received at Richland Fire and Emergency Services, Station 71, for medical transport of injured and possibly contaminated patient. The call originated from Southeast Communications Center (911) Dispatcher, per Controller inject.
0849	Out of Station, en route to incident site (SIEMENS Power Corporation).
0853	Ambulance Paramedic makes initial contact with hospital via Med Com System.
0857	Second contact via Med Com System with hospital provides patient update from the Dispatcher.
0900	Dosimetry issued, serial numbers recorded on "Emergency Worker Exposure Form" for each member of ambulance crew.
0906	Third contact with hospital, patient injuries described, burns left side of face, left forearm, left leg fracture with imbedded piece of metal, and laceration.
0907	On scene.
0910	Loading properly packaged patient into ambulance, all contaminated areas covered.
0915	Leave scene en route to hospital.
0917	Patient assessment in ambulance, contact hospital on cellular telephone, update on status and injuries, contamination is UO. ETA 0925.
0922	Arrive at hospital, patient information is exchanged with ER Physician.
0937	Patient moved into Emergency Room.
0938	Ambulance crew remained in the immediate area until they and the ambulance are monitored. Monitoring procedures are described and simulated by SIEMENS Power Corporation's Health and Safety Technician. Ambulance crew and ambulance released for return to duty.

APPENDIX 1
ACRONYMS AND ABBREVIATIONS

The following is a list of the acronyms and abbreviations that were used in this report.

ANL	Argonne National Laboratory
ARCA	Area(s) Requiring Corrective Action
B/F	Benton/Franklin Counties
CFR	Code of Federal Regulations
Cpm	Counts per minute
DOE	Department of Energy
DOH	Department of Health – WA
DRD	Direct Reading Dosimeter
EMT	Emergency Medical Technician
EOC	Emergency Operations Center
EPZ	Emergency Planning Zone
ER	Emergency Room
ERO	Emergency Response Organization
ETA	Estimated Time of Arrival
EW	Emergency Worker
FEMA	Federal Emergency Management Agency
FNF	Fixed Nuclear Facility
GM	Guidance Memorandum
HPT	Health Physics Technician
HST	SIEMENS health and Safety Technician
IP	Implementing Procedure
KI	Potassium Iodide
MS	Medical Services
NRC	U.S. Nuclear Regulatory Commission
NUREG-0654	NUREG-0654/FEMA-REP-1, Rev. 1, *"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980*
OR	State of Oregon
OR DOE	Oregon Department of Energy
ORO	Offsite Response Organization
RAC	Regional Assistance Committee
REA	Radiation Emergency Area
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
R	Roentgen
RO	Radiological Officer
Supply System	Washington Public Power Supply System
TA	Technical Advisor
TLD	Thermoluminescent Dosimeter
Utility	Supply System
WA	State of Washington
WNP-2	Washington Nuclear Plant No. 2

APPENDIX 2

DRILL TEAM LEADER AND EVALUATOR

The following personnel evaluated the MS-1 Drill on April 29, 1999:

Frank O. Bold, ARGONNE NATIONAL LABORATORY – Team Leader

Larry E. Moore, FEMA Region X - Evaluator

Eleanor C. Castle, FEMA Region X – Evaluator

APPENDIX 3

EXERCISE OBJECTIVES, EXTENT-OF-PLAY AGREEMENT, AND SCENARIO

This appendix lists the exercise objectives which were scheduled for demonstration in the WNP-2 MS-1 Drill on April 29, 1999. The Extent-of-Play Agreements approved by FEMA Region X for the drill are also included in this appendix.

The exercise objectives, contained in FEMA-REP-14, "Radiological Emergency Preparedness Exercise Manual," September 1991, represent a functional translation of the planning standards and evaluation criteria of NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for the Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980.

Because the exercise objectives are intended for use at all nuclear power plant sites, and because of variations among offsite plans and procedures, an Extent-of-Play Agreement was prepared by Benton County Emergency Management and approved by FEMA to provide evaluators with guidance on expected actual demonstration of the objectives.

A. Exercise Objectives

Listed below are the specific radiological emergency preparedness objectives scheduled for demonstration during this drill.

OBJECTIVE 5: EMERGENCY WORKER EXPOSURE CONTROL

Demonstrate the capability to continuously monitor and control radiation exposure to emergency workers.

OBJECTIVE 20: MEDICAL SERVICES – TRANSPORTATION

Demonstrate the adequacy of vehicles, equipment, procedures, and personnel for transporting contaminated, injured, or exposed individuals.

OBJECTIVE 21: MEDICAL SERVICES – FACILITIES

Demonstrate the adequacy of equipment, procedures, supplies, and personnel of medical facilities responsible for treatment of contaminated, injured, or exposed individuals.

B. EXTENT-OF-PLAY AGREEMENT and EXERCISE SCENARIO

1. Kadlec Medical Center and Richland Fire and Emergency Services

On January 27, 1999, Benton County Emergency Management submitted the attached exercise package for this drill. Copies of the objectives, limitations, extent-of-play, scenario, and FEMA Region X's February 10, 1999, approval letter, are on the following pages. The Extent-of-Play Agreement includes any significant modification or change in the level of demonstration of the applicable exercise objectives listed in Sub-section A of this appendix.

Federal Emergency Management Agency
Region X
130 228th Street, Southwest
Bothell, WA 98021-9796

COPY

February 10, 1999

Lorlee Mizell, Director
Benton County Emergency Services
651 Truman Avenue
Richland, Washington 99352

Subject: 1999 Medical Drill for WNP-2

Dear Lorlee:

This is in response to your letter of January 29, 1999, which transmitted the exercise package for the WNP-2 Medical Services (MS-1) Drill, scheduled for Thursday, April 29, 1999. I am pleased to let you know that we have no additions or exceptions to the exercise package.

Our review of the proposed objectives, limitations, extent-of-play, and scenario has determined that they are all adequate and acceptable under FEMA's REP program guidance. Likewise, our initial review of the emergency response procedures for the participating organizations, Kadlec Medical Center and Richland Fire Department, indicates that they are adequate and acceptable.

Frank Bold, Eleanor Castle and I will be evaluating the drill. Please make arrangements for Mr. Bold to be at the "accident scene" and in the ambulance as they bring the "patient" to the medical center.

Your letter also requested that we provide a no-fault evaluation of a shelter-in-place demonstration at Kinder Care Learning Center, which may be conducted in conjunction with the MS-1 and Mass Casualty Drill. I would be pleased to observe and provide comments. Just have Brian let me know if Kinder Care will be participating and, if so, provide us with the logistical information and a copy of their emergency response procedures.

We very much appreciated receiving such a complete and acceptable exercise package, as well as receiving it in timely manner. Please convey our thanks to Brian and call me at (425) 487-4743 if you have any questions.

Sincerely,

Larry E. Moore, Chairman
Regional Assistance Committee

cc: Tom Andrews, NRC
Frank Bold, Argonne
Mark Herny, WA-DOH
Susan May, WA-DOH
Tim Messersmith, SS
Max Messman, WA-EM
Mary Alice Peterson, WA-EM
D. Pringle, FEMA PT-EX-RG
John Scheer, Franklin Co. EM
Region X RAC Members

gency Management
Fax: (509)628-2621

BENTON COUNTY EMERGENCY SERVICES

651 Truman Avenue
Richland, Washington 99352
(509) 628-2600

Southeast Communications Center
Fax: (509) 628-2622

January 27, 1999

COPY

Larry Moore
FEMA REGION X
130 228th Street SW
Bothell, WA 98011

Dear Larry,

Enclosed please find the exercise package for the 1999 MS-1 Drill for Kadlec Medical Center and Richland Fire Department scheduled for April 29, 1999.

Please review the Objectives set out in section II and the Extent of Play set out in section III. If there are any changes you feel need to be made, please contact Brian Calvert to facilitate those changes.

Additionally, we are still in negotiations with Kinder Care Learning Centers over observation of their shelter-in-place demonstration scheduled in conjunction with the MS-1 and Mass Casualty Drill. We are assuming at this point that they will agree with a no-fault evaluation of their shelter-in-place procedures. We request that either you or Eleanor or another evaluator be available to observe and comment on their ability to shelter the children in their daycare facility in the event of a WNP-2 emergency.

As always, it is a pleasure to work with you and your exercise evaluation teams.

Sincerely,

Lorlee Mizell, Director
Benton County Emergency Services

FEB 01 1999
FEMA - Region X

BENTON COUNTY EMERGENCY SERVICES

651 Truman Avenue
Richland, Washington 99352
(509) 628-2600

Emergency Management
Fax: (509)628-2621

SE -COMM
9-1-1
Police • Sheriff • Fire
Medical • Disaster
EMERGENCY

Southeast Communications Center
Fax: (509) 628-2622

COPY

PT&E	Act	Info
DIR		
SEC		
SLA		
TEE		
Costello	✓	

December 4, 1998

Larry Moore
FEMA Region X
Federal Regional Center
130 228th St. SW
Bothell WA 98021-7996

Dear Larry,

This letter is to confirm the scheduling of the Kadlec/Richland Fire MS-1 drill on April 29, 1999.

As we have discussed, this drill will be part of the Multiple Casualty Incident drill on that same day.

We will prepare and forward an MS-1 exercise package to you on or about January 29, 1999.

Sincerely,

Brian E. Calvert
REP Planner

CC:

Fred Klaus

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DEC 07 1998
FEMA - REGION X

BENTON COUNTY EMERGENCY MANAGEMENT
KADLEC MEDICAL CENTER
RICHLAND FIRE DEPARTMENT
ENERGY NORTHWEST

MEDICAL SERVICES TRANSPORTATION AND FACILITIES
EVALUATED EXERCISE 1999

I. INTRODUCTION

There are two principle radiological hazards having possible effects within the boundaries of Benton County, Washington. They are the DOE-RL and contractors Hanford Site clean-up and research operations related to former plutonium production and extraction and the WNP-2 boiling water commercial nuclear power reactor operated by Energy Northwest within the boundaries of the Hanford Site. Additional nuclear industrial companies are located within the County. As part of its Emergency Management program, Benton County maintains Radiological Emergency Preparedness Plans for both major radiological hazards. Richland Fire Department and Kadlec Medical Center have also established Standard Operating Procedures for the initial evaluation, transportation and treatment of contaminated patients with life threatening or other injuries. These Radiological Emergency Preparedness Plans and Standard Operating Procedures provide a method for providing emergency medical services for individuals who are injured and contaminated during an emergency involving the local nuclear industry.

There are four essential tasks to be performed prior to transporting an injured, contaminated patient:

Implement radiological safety precautions:

* Perform operational checks on survey instruments
* Don dosimetry and protective clothing
* Survey for radiation field in vicinity of patient

Implement patient care procedures

* Perform initial patient assessment
* Stabilize life threatening conditions
* Prevent additional neck or spinal injuries
* Move patient from immediate area of radiation exposure
* Survey patient for contamination

Prepare patient for transportation

* Remove patient clothing only if possible without jeopardy to patient's condition
* Take other contamination precautions as appropriate
* Cocoon patient in blankets
* Transfer patient across contamination control line to prepared stretcher

Communicate with designated medical facility

* Alert facility to possibility of a patient with radioactive contamination.
* Communicate patient status
* Communicate estimated time of arrival

There are three essential tasks to be performed prior to the arrival of the injured contaminated patient at the emergency room.

Receive notification from paramedics

* Follow Kadlec SOP's with regard to medical treatment
* Alert staff to prepare for a contaminated patient
* Request Health Physics support

Prepare for a contaminated patient

* Follow Kadlec SOP's with regard to prepping the Emergency Room and staff for a radioactive contaminated patient

Receive and treat the patient

* Decontaminate patients without life threatening conditions and then treat the patient
* Treat patients with life threatening conditions without regard to non-lethal contamination

Kadlec Medical Center, Richland Fire Department, Energy Northwest and Benton County Emergency Management have requested FEMA evaluation of a Medical Services - Transportation and Facilities Drill. This demonstration is limited to the Richland Fire Department and Kadlec Medical Center responsibilities for emergency medical response with possible radioactive contamination.

II. BASIS FOR THE DEMONSTRATION

Procedures adopted by the Kadlec Medical Center and the Richland Fire Department as part of their Standard Operating Procedures provide for the field treatment, transportation and hospital treatment of radioactively contaminated patients. For this demonstration it is assumed that:

An accident has occurred and has resulted in one individual sustaining non-life-threatening injuries and becoming contaminated with radioactive materials.

The ambulance response dispatched to the scene is notified of possible radioactive contamination at the time of dispatch.

Richland Fire Department and Kadlec Medical Center are the responding agencies.

The evaluation requested is limited to demonstration of the following from REP-14 and REP-15:

Objective 5; Criterion 1, 2, 4; Points of Review 5.1, 5.2, 5.3, 5.4, 5.5, 5.7, 5.8, 5.9, 5.10, 5.11, 5.13, 5.14(1),(2),(4).

Objective 20; Criterion 1, 2, 3, 4, 5 and 6; All Points of Review. Points of Review 20.20 and 20.21 will be demonstrated to determine the amount of time necessary to clear an ambulance for return to service. Demonstration of Criterion 1 will be limited to determining the presence or absence of radioactive contamination. Radioactive contamination will be simulated only. Injuries will be simulated only.

Objective 21; Criterion 1, 2, 3, 4 and 5; All Points of Review. Radioactive contamination will be simulated only. Injuries will be simulated only.

The applicable sections of the Richland Fire Department Standard Operating Procedures includes performance of the following:

Section K, Emergency Medical Procedures, K-5.0, Casualty Handling in Radiation Accidents.

The applicable sections of the Kadlec Medical Center Standard Operating Procedures includes performance of the following:

Procedure for the Care of Radiation Accident Patients at Kadlec Medical Center, Richland, Washington.

III. EXTENT OF PLAY

This drill is a mini-scenario within the April 29, 1999, mass casualty drill which will involve many other local response agencies. The evaluation shall not involve any agencies other than Richland Fire Department and Kadlec Medical Center and radiation health physics personnel from Siemens Power Corporation and Energy Northwest. Department of Energy or contractor health physics personnel will be evaluated if they participate.

Upon receiving notification that the FEMA evaluator is in place, the play shall begin with a call to SE-COMM. SE-COMM shall then dispatch an ambulance and paramedic team as provided by standard operating procedure.

The Controller shall input the simulated contamination information at the scene as needed during exercise play.

The length of the field demonstration is limited to the period of time necessary to allow the evaluator to observe the arrival of the dispatched personnel, observe the field treatment of the patient and allow the evaluator to interview the personnel assigned to the field demonstration.

Emergency vehicles involved in the demonstration are not required to utilize sirens or travel in excess of the posted speed limit.

Once the area outside the emergency room has been set-up and checked by the evaluator, ropes, signs and barricades can be removed.

The length of the Emergency Room demonstration shall be limited to the period of time necessary to allow the evaluator to observe the arrival of the patient, observe the contamination control measures employed by the Medical Center Staff, observe the transfer of the patient to a treatment and examination room within the Emergency Department or to another area within the hospital, observe hospital personnel exiting the contaminated area and allow the evaluator to interview the personnel assigned to the Emergency Room demonstration.

Radioactive contamination will be simulated only. Injuries will be simulated only. Only one simulated victim shall be involved. Any signs or stickers posting or marking material as radioactive shall also be marked with "DRILL".

The demonstration shall be terminated in the event of an actual emergency requiring the services of any of the personnel elsewhere.

IV. TIMELINE

Local Time	Elapsed Time	
0830	00:00	Evaluator in place. Play begins.
	00:05	Notifications completed and participants in route.
	00:45	Approximate time Emergency Room contamination control areas established.
0915	01:00	Approximate time field demonstration is completed and patient transport begins.
	01:05	Approximate time patient arrives at the Emergency Room.

1030 03:00 Approximate time Emergency Room demonstration is completed.

1230 04:30 Critique and comments over lunch

V. ATTACHMENTS

Richland Fire Department SOP's

Kadlec Medical Center SOP's

Copies of relevant portions of REP-15

VI. ADDITIONAL INFORMATION

If the Evaluator needs additional information or has any questions, please contact Brian Calvert or Rick Garza, Benton County Emergency Management, (509)628-2600.

MS-1 SCENARIO
APRIL 29, 1999

BENTON COUNTY EMERGENCY MANAGEMENT
KADLEC MEDICAL CENTER
RICHLAND FIRE DEPARTMENT
ENERGY NORTHWEST
SIEMENS POWER CORPORATION

SCENARIO

This Medical Services Drill involves response to explosion involving a UO_2 storage facility at the Siemens Power Corporation site. The victim was working in the area of the storage facility when an explosion of unknown cause burst the side of the storage facility. The victim was burned and cut and suffered a concussion. He was unconscious, but has come around. He is responsive but very groggy and can't recall much of what happened. His clothes were burned in the blast. He shows signs of UO_2 contamination. Siemens PERT responders have initiated treatment and are preparing the victim for transportation to Kadlec.

The victim's extent of injuries and contamination level:

Laceration: several on left side, shrapnel protruding from left thigh

Burns: left side not so many as to be life threatening

Pain: Hurts all over

Vital signs: Respirations = 25
Pulse = 110
Mental Status = responsive but groggy

Contamination levels

Laceration left leg	10,000+ dpm/100cm2
Hands	10,000+ dpm/100cm2
Left side of face	10,000+ dpm/100cm2
Al least one burn	10,000+ dpm/100cm2

Decontamination

For all but two contaminated areas the first attempt will result in successful decontamination.

For one contaminated area on the patient, the first attempt to decontaminate should remove all but about 2,000 dpm/100cm2. The

second attempt for that area should reduce contamination below 1000 dpm/100cm2.

For the second area, decontamination should not be successful as a result of dirt tattooing with UO_2. The medical personnel and health physics personnel should conclude that this site cannot be decontaminated by ordinary means and take appropriate action to prevent the spread of contamination during subsequent treatment. This area should have some abraded skin.