TO: USNRC DCC

VERMONT YANKEE CONTROLLED DOCUMENT TRANSMITTAL FORM

License No DPR-28
Docket No 50-271

SECTION 1

DOCUMENT TITLE: IMPLEMENTING PROCEDURES TO THE E-PLAN

COPY NUMBER: 54

CHANGE NUMBER: #182

ISSUE DATE: March 28, 2000

INSTRUCTIONS:

a. Attached is an authorized controlled copy to the above listed document for retention as your assigned copy.

b. Review the revised material.

c. Incorporate new change into the controlled document by document issue date, if applicable.

d. Ensure that those who use the document are aware of the change.

e. Destroy all superseded pages.

f. Destroy obsolete forms and insert new forms into the files.

g. Sign and date this form and return to the Executive Secretary (ES) or Document Control Center (DCC).

h. Complete appropriate change information on VY Controlled Document Record of Changes.

TRANSMITTED BY: Diane McClure
ES or DCC Signature

AFTER COMPLYING WITH THE ABOVE INSTRUCTIONS, PLEASE RETURN TO THE ES OR DCC WITHIN 10 DAYS OF THE ISSUE DATE.

SECTION 2

The undersigned acknowledges completion of the preceding instructions.

Signature of Recipient:_____ Date:_____

A045

EPlan Implementing Procedures

To: Eplan Implementing Procedure Controlled Set Holders

From: Diane McCue

Date: 03/28/00

Re: VY EPlan Implementing Procedure Change # 182, Instruction Sheet

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Revisions: Please the following procedures:

Proc/Rev #	**Procedure Title**
OP 3508/22	On-Site Medical Emergency Procedure
OP 3535/3	Post Accident Sampling/Analysis of Primary Containment

VERMONT YANKEE EMERGENCY PLAN IMPLEMENTING PROCEDURES

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April 4, 2000

VERMONT YANKEE NUCLEAR POWER STATION

OPERATING PROCEDURE

OP 3508

REVISION 22

ON-SITE MEDICAL EMERGENCY PROCEDURE

USE CLASSIFICATION: REFERENCE

LPC No.	Affected Pages

Implementation Statement: N/A

Issue Date: 04/03/00

Dept. Mgr.		Proc. No.	OP 3508
PORC 2000-009		Rev. No.	22
Plant Mgr.		Issue Date	04/03/00
		Review Date	04/03/02

ON-SITE MEDICAL EMERGENCY PROCEDURE

PURPOSE

To outline the actions of plant personnel responsible for implementing emergency search, care, rescue, and handling of individuals who are injured, and may be contaminated or have been exposed to high radiation levels.

The use classification of this procedure is **Reference Use.**

DISCUSSION

This procedure involves accidents or occurrences on-site during which emergency medical treatment of one or more individuals is required. Proper handling of the injured, irradiated, or a contaminated individual requires the coordinated efforts of Control Room personnel, Radiation Protection, Medical Response Team Members, Security, and possibly the local ambulance and hospital.

Specific exposure guidelines for entry or re-entry into plant areas under emergency conditions are defined in OP 3507. The senior Medical Response Team member and the senior Radiation Protection person present should discuss the hazards involved in rescue procedures with the members of the response team prior to undertaking any rescue mission.

This procedure provides instructions for search and rescue, and for the initial care and treatment of the injured person(s) at the plant site with emergency care and preventative radiation protection practices upheld until more definitive care is secured at the local hospital.

This procedure is comprised of the following sections:

ATTACHMENTS

1.	VYOPF 3508.01	Vermont Yankee Medical Emergency Medical Status Record Sheet

REFERENCES

1. Technical Specifications

   a. None

2. Administrative Limits

   a. None

3. Other

   a. Special Project Report No. 0008, "Gross Beta/Gamma Instrument Conversion Factors", dated 1/30/88 (VYDPF 0530.02)
   b. Massachusetts Nuclear Incident Advisory Team Handbook
   c. AP 0021, Work Orders
   d. AP 0156, Notification of Significant Events
   e. RP 0520, Personnel Skin Dose Assessment
   f. AP 0529, Cancelled 3/15/96
   g. DP 0530, Radiation Protection Data and Information Logging
   h. OP 3501, Alert
   i. OP 3502, Site Area Emergency
   j. OP 3503, General Emergency
   k. OP 3506, Emergency Equipment Readiness Check
   l. OP 3507, Emergency Radiation Exposure Control
   m. OP 3524, Emergency Actions to Ensure Initial Accountability and Security Response
   n. OP 4530, Dose Rate Radiation Surveys
   o. RP 4532, Personnel Monitoring When Exiting Restricted Areas
   p. AP 6807, Collection, Temporary Storage and Retrieval of QA Records

PREREQUISITES

1. Medical Response Team members or Security personnel shall notify the Control Room, or the Technical Support Center (TSC), if activated, prior to the Medical Response Team entering and departing from any emergency area.

DEFINITIONS

1. Minor Injury or Illness - Any situation where the patient(s) does not need urgent treatment or attention and is not physically or mentally impaired. Examples include small abrasions, lacerations, punctures, minor headaches due to tension, and slivers. Initiation of this procedure is not warranted for minor injuries or illnesses.

2. Major Injury or Illness - Any situation where the patient(s) needs immediate attention by medically trained individuals. Examples include any bleeding, breathing difficulties, chest pain, possible fractures, confusion, disorientation, or other major injuries. This procedure shall be initiated immediately.

NOTE

A medical emergency shall be initiated if bleeding cannot be controlled. When any amount of blood is present, it needs to be properly cleaned up. Safety, Medical Team members or Hazmat-qualified individuals have been trained in the proper clean-up steps.

If in doubt as to whether an injury or illness is minor or major, do not hesitate to treat as major injury.

PROCEDURE

A. Immediate Actions to be Taken in the Event of a Medical Emergency

1. Any individual discovering a medical emergency shall immediately notify the Control Room by the most expeditious means available and inform the Control Room of the location, condition, and number of patients.

2. Control Room personnel shall turn the Page System Volume Increase Switch to the "Alert" position, and make the following announcement on the plant page system:

"MEDICAL EMERGENCY, MEDICAL EMERGENCY
MEDICAL ASSISTANCE NEEDED (LOCATION), MEDICAL RESPONSE TEAM RESPOND
MEDICAL ASSISTANCE NEEDED (LOCATION), MEDICAL RESPONSE TEAM RESPOND"

3. The individual(s) at the site of the medical emergency shall administer first aid treatment consistent with their level of training until medical support arrives.

B. Subsequent Actions in Response to a Medical Emergency

1. The Medical Response Team shall:

a. notify the Control Room, or TSC, if activated, to request radiological conditions of the area,

b. proceed to the location of the injured person. Enroute to the specified location, take emergency medical equipment with you from first aid stations around the plant,

c. the first member of the Medical Response Team to reach the injured person shall be considered the "leader" of the rescue effort unless relieved by a member of the medical team with equal to or higher certified medical training,

d. the Medical Response Team leader shall assign other available qualified personnel pertinent duties in regard to the care of the injured person, such as a recorder to document all medical data,

e. the Medical Response Team leader will assign a "communicator" to keep the Control Room, or TSC, if activated, informed of the status of the medical emergency,

f. upon initial evaluation of the patient, Medical Response Team members shall determine if Rescue, Inc. will be required for assistance or transportation to the hospital. The Control Room shall be notified of this decision by a Medical Response Team member or the communicator via the plant page system or two-way radios,

g. the patient shall be moved to a lower radiation area for further treatment if the risk from radiation exposure is high and the patient's physical condition will not be jeopardized by the move,

h. the communicator shall periodically update the Control Room, or TSC, if activated, on the patient's status, vital signs and other pertinent information as medical treatment is being rendered,

i. the Control Room shall complete VYOPF 3508.01 and forward it to the Safety Coordinator,

j. the Medical Response Team leader shall transfer the patient to ambulance personnel when deemed appropriate,

k. the communicator shall notify the Control Room, or TSC, if activated, when the ambulance has departed for the hospital with the patient(s).

2. Radiation Protection personnel shall:

a. respond to a Medical Emergency if the location is in a portion of the plant where radiological conditions could be a factor,

b. make a radiological assessment and determine probable conditions using experience, plant knowledge, postings in the area, and quick surveys to make this determination,

NOTE

It is important to realize the primary goal is to stabilize the patient. General area dose rates of less than 10 R/hr and contamination levels less than 1,000,000 dpm/100cm^2 (280 mRad/hr smearable) are to be of secondary concern until the patient is stabilized.

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c. if radiological conditions are deemed significant, inform the Medical Response Team leader and make appropriate recommendations,

d. ensure the Control Room, or TSC, if activated, is informed of the radiological conditions in the area and the probability of the patient being contaminated,

e. when the patient can be moved to an appropriate location, do a complete survey of the patient using an RM-14 with an HP 210 probe, or other appropriate survey instrument,

f. if the patient is contaminated, every effort should be made to decontaminate to releasable limits if the medical condition will allow it,

g. if the patient is contaminated or potentially contaminated, ensure Radiation Protection personnel accompany the ambulance, or meet the ambulance at the hospital,

NOTE

Dose measurements may be accomplished in one of several ways (i.e., dosimetry on Radiation Protection Technician, new dosimetry on patient, calculation, dosimetry on ambulance personnel).

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h. if the patient is contaminated to the extent that general area dose rates of greater than 50 mR/hr would occur, then provisions should be made to measure dose to ambulance attendants,

i. keep the Control Room informed of progress,

j. ensure the Radiation Protection Manager is informed if a contaminated patient is being transported to the hospital.

3. For cases of high radiation exposures (i.e., greater than 50 R Total Effective Dose Equivalent), the Radiation Protection Manager or Plant Health Physicist will contact the following:

a. The Nuclear Incident Advisory Team (NIAT) physician, or if not available, the Massachusetts Department of Public Health (MDPH) Radiation Control Program representative who will, in turn, implement from the NIAT Handbook, Section D.10 entitled "Radiation Overexposure Treatment Assistance."

Aaron B. Brill, MD (NIAT Physician)	(Work) (Alt. Work) (Home)	[redacted]
Mr. Robert M. Hallisey (MDPH)	(Work) (Home)	[redacted]
Mr. Robert Watkins (MDPH)	(Work) (Home)	[redacted]
Mr. Thomas Matthews (MDPH)	(Work) (Home)	[redacted]

b. Vermont Yankee's Radiological Medical Consultant (see below) and inform him of the high radiation exposure incident.

David E. Drum, MD (Work) [redacted]
(Home)

4. Radiation Protection personnel who are required to accompany or meet a contaminated patient at the hospital shall take the following actions upon arrival:

NOTE

This survey may be delayed, but should be done as soon as practicable.

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a. Advise ambulance attendants they are not to leave the hospital until they and the ambulance are monitored for contamination.

NOTE

Avoid speaking in technical terms unless you are certain they are understood. Instead, use descriptive words such as "slightly", "extremely", "low-level", "trace", "life-threatening", etc.

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b. Advise the attending physician of the patient's radiological complications, such as:

1) significant total external dose,

2) contamination levels detected on the patient,

3) probable isotopes in wound,

4) radioactivity probably inhaled or ingested at accident scene,

5) contamination level of object causing the wound(s) if known,

6) other similar appropriate information.

c. Suggest to the attending physician actions you feel should be done; such as excreta samples, if ingestion was involved, nasal tissue samples, if inhalation was probable, etc.

d. Provide dose rate or contamination levels to attending personnel periodically, or as requested, and interpret them into meaningful terms.

e. Assist in the decontamination of the patient as appropriate.

f. Assist in the final survey and cleanup of the treatment area and return all contaminated equipment and wastes to Vermont Yankee.

5. Security personnel shall:

a. dispatch an officer to the emergency area with a two-way radio upon notification of the Medical Emergency,

b. provide first aid if no medical team member is present,

c. notify the SSS upon determination that the Medical Response Team has requested Rescue Inc. to provide assistance or transportation to the hospital.

NOTE

The ambulance crew and vehicle need not be searched prior to entering the Protected Area during a medical emergency.

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d. expedite access of ambulance personnel to the emergency area by assigning an officer as an escort to the crew and issuing dosimetry and visitors badges to the ambulance crew,

e. via their two-way radio, Security or a Medical Response Team member may update the Control Room regarding the patient's status and vital signs,

f. prior to the patient's departure from the plant site, Security will remove the patient's dosimetry and Protected Area badge.

6. Control Room personnel shall:

a. record all pertinent information forwarded to the Control Rom by the Medical Response Team or Security in the Control Room Log and on VYOPF 3508.01,

b. upon notification by Medical Response Team members or Security that transportation off-site of the accident patient is required:

1) Notify RESCUE, INC. (911) to request transportation of the injured to Brattleboro Memorial Hospital or Franklin Medical Center. Rescue, Inc. should be made aware of whether or not the person to be transported is contaminated. Vermont Yankee's 911 address is 546 Governor Hunt Road, Vernon, Vermont.

NOTE

If for some unforeseen reason off-site transportation is unavailable, the patient will be transported to the hospital via the best means available.

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2) Notify Brattleboro Memorial Hospital at [redacted]. ASK FOR THE EMERGENCY DEPARTMENT SUPERVISOR. Provide the Emergency Room personnel with as much information as possible, including whether or not the person is contaminated, how much, and what isotopes, if known.

3) If more than one patient will require hospital treatment, the back-up hospital, Franklin Medical Center, shall be notified at [redacted]. ASK FOR THE EMERGENCY ROOM SUPERVISOR. Provide the Emergency Room with as much information as possible, including whether or not the person is contaminated, how much, and what isotopes, if known.

4) Contact the Radiation Protection Manager or his alternate to ensure that a Radiation Protection representative accompanies or meets the patient at the hospital if contamination or other Radiation Protection concerns are involved.

5) Contact VY Physician (see below) and inform him of the accident.

George Idelkope, MD (Work) (Home) [redacted]

c. If the patient is contaminated and transported to an off-site medical facility, or the incident resulted in an on-site fatality, refer to AP 0156.

C. Personnel Search and Rescue During a Plant Emergency

NOTE

Search and rescue team should include team leader familiar with the area to be searched, medical response team member(s), RP personnel, Fire Brigade member and an armed Security Guard whenever possible.

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1. Immediate Life-Saving Rescue Required

a. Evaluate available information and discuss best apparent rescue approach with senior Medical and Radiation Protection personnel prior to attempt if practicable.

b. Limit exposure of rescuers in accordance with OP 3507, Emergency Radiation Exposure Control.

c. Keep the Control Room, or Technical Support Center (TSC), if activated, advised of the situation and closely monitor the time in a high radiation area.

NOTE

Work as quickly as is consistent with safety and avoid sources of high dose rates in the rescue area.

---

d. Perform rescue mission consistent with good first aid practices and as dictated by dose rates encountered.

2. Organized Search and Rescue - Following a Personnel Accountability Check

NOTE

Use of active Radiation Work Permits (RWPs) or Security's On-Site Computer Report may assist with possible location of individuals.

---

a. Obtain the following information prior to conducting search and rescue efforts:

1) Name of individual(s).

2) Last known location(s) or possible present location(s) of individual(s).

3) Any significant plant conditions that may affect the search effort (e.g., known or suspected hazards).

b. Form and conduct search and rescue efforts as follows:

1) Limit exposure of search and rescue team members in accordance with OP 3507, Emergency Radiation Exposure Control.

2) Coordinate the search efforts to minimize duplication, especially if the search area is large.

3) Initiate the search effort at the last known or possible known location(s).

4) Conduct the search effort by keeping all members of the team in the same general area (i.e., frequent visual checks), and move from one area to the next area as a team, but each searching independently.

5) When a missing individual is located, immediately notify the TSC and provide information on individual's condition and additional relevant information (e.g., need for medical or rescue assistance, plant conditions encountered, etc.).

c. If individuals are found injured or need medical treatment, initiate Sections A and B of this procedure.

FINAL CONDITIONS

1. Inventory and replace all used equipment and supplies in accordance with OP 3506.

2. Log all information in appropriate logs or in the Radiation Protection Log at the Control Point.

3. Retain VYOPF 3508.01 in accordance with AP 6807.

VERMONT YANKEE
MEDICAL EMERGENCY
MEDICAL STATUS RECORD SHEET

MEDICAL STATUS

Patient Name:_____ DOB:_____

Date and time of incident:_____

Location of incident:_____

Injuries and general medical condition of Patient:

Cause of injuries or medical problems:

_____

_____

_____

_____

Medical response measures administered:

_____

_____

_____

_____

Time	Respiration	Pulse	B/P	Consc.	Pupils R / L	Skin	Comments
	Rate _____ ___ Shallow ___ Labored			___ Full ___ Semi ___ Un	_____ Normal _____ _____ Dilated _____ _____ Constricted _____ _____ No-React _____		
	Rate _____ ___ Shallow ___ Labored			___ Full ___ Semi ___ Un	_____ Normal _____ _____ Dilated _____ _____ Constricted _____ _____ No-React _____		
	Rate _____ ___ Shallow ___ Labored			___ Full ___ Semi ___ Un	_____ Normal _____ _____ Dilated _____ _____ Constricted _____ _____ No-React _____		

Comments:

Completed By_____
Signature (Control Room)

RETURN THIS FORM, WHEN COMPLETED, TO THE SAFETY COORDINATOR

VERMONT YANKEE NUCLEAR POWER STATION

OPERATING PROCEDURE

OP 3535

REVISION 3

POST ACCIDENT SAMPLING AND ANALYSIS OF PRIMARY CONTAINMENT

USE CLASSIFICATION: **CONTINUOUS**

LPC No.	Affected Pages

Implementation Statement: N/A

Issue Date: 04/03/00

TABLE OF CONTENTS

PURPOSE

To outline the special procedures necessary to handle samples of primary containment, perform analyses and interpret results during post accident conditions.

No Technical Specifications Sections apply to this procedure.

DISCUSSION

During post accident conditions, system samples may be highly radioactive. Because of the high radiation levels, these samples require special handling. This procedure outlines the special handling required. The RP Manager is responsible for implementation of this procedure.

During certain postulated accidents, the availability of on-site counting equipment may be compromised. In these instances, post accident samples may be counted at laboratories at Yankee Atomic in Rowe, Massachusetts or Maine Yankee in Wiscasset. A determination will be made by the Operations Support Center Coordinator's Assistant, in conjunction with the Radiological Assistant at the Emergency Operations Facility/Recovery Center, as to the most appropriate alternative laboratory facility to be used, based on existing conditions.

Tables 1,2 and 3 are provided for use by the OSC Coordinator's Assistant and the sampling and analysis teams in their evaluation of sampling conditions prior to obtaining the isotopic results after analysis. The information contained in these tables is generated from design basis accident assumptions and this fact should be taken into account in the use of these tables.

VYOPF 3535.02, Sample Accountability Log shall be utilized from the onset of emergency sampling and analysis to control the location of all emergency samples.

ATTACHMENTS

1.	VYOPF 3535.01	Primary Containment Data/Analysis
2.	VYOPF 3535.02	Primary Containment Sample Accountability Log
3.	VYOPF 3535.03	Post Accident Sampling of Primary Containment
4.	Table 1	Expected Radioactivity Concentration ($\mu Ci/cm^3$) in Containment Atmosphere After Shutdown Based on Design Basis Source Term (100/25/0)
5.	Table 2	Expected Dose Rates at Containment Sampling Stations at Different Times After Shutdown[c]
6.	Table 3	Expected Containment Air Samples Dose Rates at Different Times After Shutdown[a]

REFERENCES and COMMITMENTS

1. Technical Specifications and Site Documents

   a. None

2. Codes, Standards, and Regulations

   a. NUREG 0737, Sec. II.B.3

3. Commitments

   a. None

4. Supplemental References

   a. VYAPF 0645.01, Evaluation of PASS High Activity Correction Factor
   b. OP 0642, Sample Valve Lineup and Control
   c. DP 2630, Analytical Instrumentation
   d. DP 2631, Radiochemical Instrumentation
   e. AP 6807, Collection, Temporary Storage and Retrieval of QA Records

PRECAUTIONS

1. During sampling, communications should be maintained with the OSC using either a portable radio or a Gai-Tronics.

PREREQUISITES

1. Post accident sampling equipment and tools.

2. Obtain a dose rate meter capable of measuring over the expected range of exposure.

3. Dose commitment limits have been established and should be adhered to for all Post Accident Sampling. Consult with the OSC Coordinator for specific instructions. Tables 2 and 3 should be consulted by the OSC Coordinator and sample team members for information concerning expected dose rates.

PROCEDURE

A. Preparation for Primary Containment Sampling

1. The Duty RP Supervisor shall:

a. evaluate whether or not respiratory protection should be worn during sampling,

RP Supv.

b. evaluate alarming dosimeter dose and dose rate alarm settings,

RP Supv.

c. evaluate whether or not extremity dosimetry and high range pocket dosimeters should be worn during sampling,

RP Supv.

d. discuss methods and techniques to minimize personnel exposure when handling high activity sources at pre-job briefing.

RP Supv.

2. Evacuate two 40cc sample bombs.

RP Tech.

3. The Duty RP Supervisor shall verify with the Control Room that either the A or B H_2/O_2 analyzer (SAH/VG/5A1 or SAH/VG/5B1) is in operation and lined-up for suction from the Drywell.

RP Supv.

4. Dispatch sample team to obtain containment sample and sample containment as per VYOPF 3535.03.

RP Supv.

B. Preparation and Analysis of Samples

1. Initiate VYOPF 3535.01.

RP Tech.

2. Record appropriate sample identifying information on VYOPF 3535.02.

RP Tech.

CAUTION

Off gas vial preparation and transfers should be performed under the chem lab hoods.

3. Using a shielded syringe, take 0.5 cc of the sample gas via the sample hole in the bottom of the sample shield, and transfer it into a 14 cc offgas vial.

RP Tech.

4. Count the sample on the MCA using the Containment PAS (Offgas vial) menu selection with a sample volume of 0.5 cc.

   a. If the sample activity yields an MCA dead time >20%, count the sample as per Section C.

   b. If the MCA is unavailable, refer to Section C.

RP Tech.

5. Attach isotopic to VYOPF 3535.01.

RP Tech.

6. The RP Supervisor shall evaluate isotopic results from the isotopic printout and summarize results on VYOPF 3535.01, Section 1.a and 1.b.

RP Supv.

7. If H_2 or O_2 analyses are required:

   a. transfer custody of sample bomb to Chemistry, recording appropriate information on VYOPF 3535.02, for analysis on the GOW-MAC per DP 2630. DO NOT DILUTE.

RP Tech.

   b. Record results on VYOPF 3535.01, Sections 2 and 3, as appropriate.

Chem Tech.

   c. Attach H_2 or O_2 chromatograph form(s) to VYOPF 3535.01.

Chem Tech.

8. Chemistry shall report and route VYOPF 3535.01 results to the OSC Coordinator.

Chem Tech.

9. Maintain a log of all samples on VYOPF 3535.02.

C. Counting Techniques for Highly Radioactive Samples

> **NOTE**
>
> The following techniques are listed in order of preference.

1. Use of sample dilution.

   a. If further dilutions are not recommended, proceed to Step C.2.

   b. Using shielded syringe take 0.5cc of sample from original offgas vial, and inject into a new 14 cc offgas vial

   $$V_2 = \frac{0.5cc}{28\ DF} = 0.0179cc = \text{Isotopic Volume}$$

   _____
   RP Tech.

   c. Return to Step B.4.

2. Use of the MCA at extended distances.

> **NOTE**
>
> If general area dose rate in the Counting Room exceeds 5 mR/hr, the use of the MCA at extended distance with shield top removed is prohibited (LAI-417B).

   a. Open the shield top from the 10% HPGE detector.

   _____
   RP Tech.

   b. Using rod and holder, suspend the offgas vial above the detector (a minimum of 1 foot) at a distance that will give a dead time of $<20\%$.

      1) If dead time is $\geq 20\%$, proceed to Step C.3.

   _____
   RP Tech.

   c. Measure the distance from the sample to the top of the detector.

   Distance (ft)_____

   _____
   RP Tech.

d. Count the offgas vial using the Chemistry menu.

1) Select Start a Count and depress PF1.

2) Select Det 1 and depress PF1.

3) Select Pass Elevated Sample Analysis and depress PF1.

4) Select 01 2" Filter @ 2" and depress PF1.

5) Under the Entries for Standard Counting procedure menu,

a) enter Sample ID,

b) sample quantity (i.e., 0.5),

c) sample units (cc),

d) sample Date/Time, and

e) depress PF1.

6) Under the PASS Elevated Distance Entry menu, enter Elevated distance in feet and depress PF1.

7) If dead time is $\geq 20\%$,

a) elevate sample 1 ft. higher,

b) repeat Steps d.1) through d.6).

8) If dead time is $< 20\%$, press return.

_____
RP Tech.

e. Calculate the sample activity as follows:

$\mu Ci/ml = (X)\ (d^2)\ (17)$

where: X = μCi/ml from isotopic printout
d = distance in ft. measured in C.2.c above
17 = correction factor

_____
RP Tech.

f. Proceed to Step B.5.

3. Use of portable instruments.

NOTE

If the MCA is available, it can be used to give a qualitative measure of major isotopes. If it is not available, an assumption must be made based on what is known about the sample at the time.

a. Measure the Dose Rate (in R/hr) off the offgas vial at 1 meter, and record on VYOPF 3535.01, Section 1.c.

RP Tech.

b. Calculate the sample activity as follows and record on VYOPF 3535.01, Section 1.c.

$$\mu Ci/cc = \frac{(R/hr \text{ at } 1 \text{ meter})(CF)}{(V)}$$

RP Tech.

where:

V = sample volume (cc). Use 0.5 cc for original offgas vial

CF = μCi per R/hr @ 1 meter

Values for CF

Time Post Shutdown	Containment Air*
1 hr	2.4E6
8 hr	9.3E6
24 hr	1.6E7

* Ratio of Exposure Rates from Table 3 to Total Activity Concentration in Table 1.

c. The RP or Chemistry Supervisor shall calculate activity concentrations for the isotopes listed in Table 1 as per the following:

RP Supv./
Chem Supv.

$$\text{Isotope } (\mu Ci/cc) = \frac{(\text{Sample } \mu Ci/cc)(\text{Table 1 Isotope } \mu Ci/cc \text{ at Time Post Shutdown})}{(\text{Table 1 Total } \mu Ci/cc \text{ at Time Post Shutdown})}$$

d. Proceed to Step B.7.

FINAL CONDITIONS

1. Submit all forms for review and filing as per AP 6807.

PRIMARY CONTAINMENT DATA/ANALYSIS

Sample Taken on_____, at_____, by_____.
Date Time Signature

INITIALS

1. Isotopic Analysis

a. Summary isotopic results:

_____µCi/cc, _____µCi/cc, _____µCi/cc
Total NG Total Iodine Total Particulate

b. Attach isotopic printout to this form. _____

c. Calculated Containment Airborne Activity Concentrations

Time Post Shutdown_____hours Measured Dose Rate at 1 meter_____R/hr

Calculated Total Sample Activity Concentration_____µCi/cc

Kr85m_____µCi/cc Xe133_____µCi/cc I131_____µCi/cc

Kr85_____µCi/cc Xe135m_____µCi/cc I132_____µCi/cc

Kr87_____µCi/cc Xe135_____µCi/cc I133_____µCi/cc

Kr88_____µCi/cc I134_____µCi/cc

I135_____µCi/cc

2. Hydrogen Concentration

a. H_2 results. _____%H_2 _____

b. Attach chromatograph to form. _____

3. Oxygen Concentration

a. O_2 results. _____%O_2 _____

b. Attach chromatograph to form. _____

Reviewed by:_____
OSC Coordinator's Assistant

PRIMARY CONTAINMENT SAMPLE ACCOUNTABILITY LOG

Sample Identification	Location (Update after each movement)	Date	Time	Initials

VYOPF 3535.02
OP 3535 Rev. 3
Page 1 of 1
RT No. 10.E06.168

POST ACCIDENT SAMPLING OF PRIMARY CONTAINMENT

Sample Team Members: _____ _____ _____

_____ _____ _____

Initials

1. Sample station general area surveyed, and it has been determined that the dose commitment established by the OSC Coordinator will not be exceeded. If it appears as though the dose commitment will exceeded, leave the area and contact the OSC Coordinator for further instructions. _____

NOTE

If a valve is found to be in an incorrect position, note this fact on the checksheet and inform the Chemistry Supervision.

---

2. Check open VG-36. _____
3. Check closed VG-37. _____
4. Check closed VG-38. _____
5. Check closed VG-39. _____
6. Check closed VG-40. _____
7. Check open VG-43. _____
8. Check closed VG-44. _____
9. Remove cover of Gray shield pig. _____
10. Place 40 cc sample bomb in Gray shield pig. _____
11. Place the Gray shield pig on the sample jack. _____
12. Raise the shield pig up until the sample bomb has connected to the sampling quick disconnect. _____

Initials

13. Record the sample volume pressure indicated on PI-109-38 Pressure:_____. _____

CAUTION

MONITOR FOR DOSE RATE INCREASE IN STEP 14.

---

14. OPEN VG-37. _____

15. OPEN VG-38. _____

16. CLOSE VG-36. _____

NOTE

Keep as far away as possible from sample during purge to minimize exposure.

---

17. Allow line to purge for 5 minutes. _____

18. OPEN valve VG-39. _____

19. CLOSE VG-39. _____

CAUTION

DO NOT ALLOW PRESSURE TO SAMPLE BOMB TO EXCEED 5 PSIG.

---

20. Crack open VG-40 for 5 seconds or when indicated pressure reaches 5 psig, whichever comes first. _____

21. CLOSE VG-40. _____

22. Turn on temperature gauge TI-109-1. _____

23. Record the sample volume pressure and temperature as indicated on:

    PI-109-38 Pressure:_____
    TI-109-1 Temperature:_____ °F _____

24. Lower the shield pig 2 inches and monitor dose rates off the sample bomb. _____

Initials

25. Remove sample bomb from the quick disconnect and drop it into the shield. _____

26. Lower the shield to the grating and replace the cover. _____

27. Place the shield aside as this is only a sample line purge. _____

28. Remove cover from the Yellow No. 2 shield pig. _____

29. Place 40 cc sample bomb in shield pig. _____

30. Place the Yellow No. 2 shield pig onto the jack. _____

31. Raise the shield pig up until the sample bomb has connected to the sampling quick disconnect. _____

32. Record the sample volume pressure indicated on PI-109-38 Pressure:_____. _____

33. OPEN valve VG-39. _____

34. CLOSE VG-39. _____

CAUTION

DO NOT PRESSURIZE SAMPLE BOMB OVER 5 PSIG.

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35. OPEN VG-40 for 5 seconds or until sample bomb pressure equals 5 psig. _____

36. CLOSE VG-40. _____

37. Record sample time_____. _____

Initials

38. Record the sample volume pressure and temperature as indicated on:

    PI-109-38 Pressure:_____
    TI-109-1 Temperature:_____ °F _____

39. Turn off temperature gauge TI-109-1. _____

40. Lower the shield pig 2 inches and monitor dose rates off the sample bomb. _____

41. Remove sample bomb from the quick disconnect and drop it into the shield. _____

42. Lower the shield to the grating and replace the cover. _____

43. OPEN VG-36. _____

44. CLOSE VG-37. _____

45. CLOSE VG-38. _____

CAUTION

USE LIFTING WINCH TO LOWER PIG TO THE GROUND.

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46. Lower the shield pig and take it to a lower background area. _____

47. OSC Coordinator notified that sampling is complete and sample being prepared for analysis as per Step B. _____

Completed by:_____ / _____
RP Technician Date

Reviewed by:_____ / _____
OSC Coordinator's Asst. Date

TABLE 1

EXPECTED RADIOACTIVITY CONCENTRATION ($\mu Ci/cm^3$) IN CONTAINMENT ATMOSPHERE AFTER SHUTDOWN BASED ON DESIGN BASIS SOURCE TERM (100/25/0)

Nuclide	1 Hour	8 Hours	24 Hours
Kr-85m	1.6E+03	5.3E+02	4.4E+01
Kr-85	5.9E+01	5.9E+01	5.9E+01
Kr-87	2.0E+03	4.5E+01	7.3E-03
Kr-88	3.8E+03	6.9E+02	1.4E+01
Xe-133	1.3E+04	1.3E+04	1.2E+04
Xe-135m	1.8E+03	8.4E+02	1.6E+02
Xe-135	4.5E+03	5.7E+03	3.2E+03
I-131	1.6E+03	1.5E+03	1.5E+03
I-132	2.3E+03	2.2E+03	1.9E+03
I-133	3.2E+03	2.6E+03	1.5E+03
I-134	2.5E+03	2.2E+01	8.2E-05
I-135	2.7E+03	1.3E+03	2.5E+02
TOTAL (above)	3.9E+04	2.8E+04	2.1E+04

Assumptions and References:

1. ORIGEN2 Calculation (Core Damage Assessment Methodology).
2. Containment Air Volume = 6.742E+09cm^3 (Core Damage Assessment Methodology).
3. Design Basis Source Term: 100% NG and 25% Iodines.

TABLE 2

EXPECTED DOSE RATES AT CONTAINMENT SAMPLING STATIONS AT DIFFERENT TIMES AFTER SHUTDOWN[c]

Time (hr)	Containment Air Sampling Station
1	6.0E+0[a] R/h
3	2.6E+0 R/h
8	1.1E+0 R/h
24	4.7E-1 R/h
72	3.1E-1 R/h

NOTES:

a. Per Calculation VYC-70.

b. Per Calculation VYC-83, Vent Stack Only.

c. Dose Rates at other decay times are based on Table 11 of EDS Nuclear, Report No. 02-0180-1126, December 29, 1979.

TABLE 3

EXPECTED CONTAINMENT AIR SAMPLES DOSE RATES (R/hr)
AT 1 METER, AT DIFFERENT TIMES AFTER SHUTDOWN[a]

Time (hr)	40cm^3 Undiluted Containment Air Sample	0.5cm^3 Containment Air Sample in 14cm^3 Vial
1	6.4E-1 R/h @ 1 meter	8.0E-3 R/h @ 1 meter
3	2.8E-1 R/h @ 1 meter	3.5E-3 R/h @ 1 meter
8	1.2E-1 R/h @ 1 meter	1.5E-3 R/h @ 1 meter
24	5.2E-2 R/h @ 1 meter	6.5E-4 R/h @ 1 meter
72	3.3E-2 R/h @ 1 meter	4.2E-4 R/h @ 1 meter

NOTES:

a. All dose rates are calculated at 1m away from the source. Dose rates at other decay times are based on Table 11 of EDS Nuclear, Report No. 02-0180-1026, December 29, 1979.

Per VYC-70, no shielding, no dilution.