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September 23, 2002
BVY 02-74

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Vermont Yankee Nuclear Power Station
License No. DPR-28 (Docket No. 50-271)
Vermont Yankee Emergency Plan Implementing Procedure Change

In accordance with 10 CFR 50.54(q), enclosed are the latest changes to the Vermont Yankee Emergency Plan Implementing Procedures, OP 3533, Rev. 6, OP 3534, Rev. 4, and OP 3542, Rev. 1, LPC#1 , the change memos and the 10 CFR 50.54(q) Evaluation Checklists. These changes were determined to not need prior NRC review and approval.

If you have any questions, please contact Audra Williams, Emergency Planning Coordinator, in our Brattleboro office at (802) 258-4177.

Sincerely,

ENTERGY NUCLEAR NORTHEAST
VERMONT YANKEE

Lori Tkaczyk
Emergency Planning Manager

Attachments
cc: USNRC Region 1 Administrator
USNRC Resident Inspector – VYNPS
USNRC Project Manager – VYNPS (no attachments)
David M. Silk, Senior Emergency Preparedness Specialist,
USNRC Region 1
Vermont Department of Public Service

A045

#54 - NTR

Eplan Implementing Plant Procedures

To: Eplan Implementing Procedure Controlled Set Holders

From: Diane McCue

Date: 09/25/2002

Re: VY EPlan Implementing Procedure Change #209nstruction Sheet

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A new Table of Contents is included.

REVISIONS: Please replace the following procedures: -

Proc/Rev #	Procedure Title
OP 3533/6	Post Accident Sampling of Reactor Coolant
OP 3534/4	Post Accident Sampling of Plant Stack Gaseous Release

LPC's: The fol.lowing LPC should be incorporated into the appropriate procedures:

Proc/Rev #	LPC #	Procedure Title
OP 3542/1	1	Operation of the TSC

Vermont Yankee Emergency Plan Implementing Procedures

Table of Contents

September 24, 2002

LPC's

VERMONT YANKEE NUCLEAR POWER STATION

OPERATING PROCEDURE

OP 3542

REVISION 1

OPERATION OF THE TECHNICAL SUPPORT CENTER (TSC)

USE CLASSIFICATION: **REFERENCE**

LPC No.	Effective Date	Affected Pages
1	09/17/02	7-12 of 16

Implementation Statement: N/A

Issue Date: 06/06/02

Time/Date Initials

NOTES

- SS/PED retains responsibility for off-site States' notifications (NAS – Orange Phone) until Site Recovery Manager assumes responsibility for implementation of VY Emergency Plan
- The FTS NRC ENS phone (#41) is located in the southwest corner of the room (see Figure 4 of OP 3504)

1.3. Contact the SS/PED when ready to assume overall responsibility for the implementation of the VY Emergency Plan. This includes the following primary responsibilities: ____/____ _____

1.3.1. Escalation of the emergency,

1.3.2. Notification of off-site NRC authorities (FTS ENS phone), and

1.3.3. Authorization of off-site protective action recommendations (PARs).

NOTE

Facility activation may be modified or suspended if the safety of personnel may be jeopardized by a security event or other event hazardous to personnel.

1.4. Assign an individual to implement OP 3541, Activation of the TSC.

Name:_____ ____/____ _____

1.5. Assign an individual to read AP 3125 and track all subsequent EAL entries.

LPC 1

Name:_____ ____/____ _____

1.6. Ensure that a TSC staff member is assigned to record in the TSC Logbook all TSC activities associated with exercising effective direction and control of the emergency. ____/____ _____

		Time/Date	Initials
1.7.	If a release is in progress or expected, ensure that OP 3513, Evaluation of Off-Site Radiological Conditions, is implemented by a qualified individual.	(circle event) A S G ____/____	
1.8.	IF conditions warrant escalation to a GENERAL EMERGENCY, THEN implement OP 3511, "Off-Site Protective Action Recommendations."	G ____/____	

NOTE

Minimum staffing for activation includes:

1) TSC Coordinator
2) Engineering Representative
3) Maintenance Representative
4) Security Representative
5) Operations Representative
6) Reactor Engineering Representative
7) Radiation Protection Representative
8) Chemistry Representative
9) OSC Coordinator

1.9.	Ensure that Technical Support Center Staff is in place for activation and that the minimum required staffing is fulfilled.	(circle event) A S G ____/____	
1.10.	Notify the SS/PED (and the SRM, if applicable) that the TSC is activated.	(circle event) A S G ____/____	
1.11.	Announce over the plant paging system that the TSC is activated. ("Attention in the Plant, Attention in the Plant, the Technical Support Center is now activated, repeat, the Technical Support Center is now activated") (Repeat)	____/____	

NOTE

The Emergency Response Data System (ERDS) must be enabled as soon as possible, but not later than one hour, after the initial declaration of an ALERT, SITE AREA EMERGENCY, or GENERAL EMERGENCY

1.12.	Ensure the ERDS data link with the NRC has been enabled per RP 2454.	____/____	

	Time/Date	Initials

1.13. Maintain overall responsibility until relieved by the Site Recovery Manager.

1.14. Record time when Site Recovery Manager calls to assume responsibility for implementation of the VY Emergency Plan.

SRM Name:_____ ____/____ _____

1.15. Assign the Operations Support Center Coordinator (OSCC).

OSCC Name:_____ ____/____ _____

NOTE

All work assignments from the TSC to the OSC should be made through the phone to the Communicator. Do not use the ring down phone or Gaitronics.

1.16. IF the possibility of a radiological release is likely to occur, THEN the TSC Coordinator or designee initially directs the activities and maintains communications with site boundary and off-site teams until the EOF/RC is deemed operational. ____/____ _____

NOTE

Accountability may be suspended if the safety of personnel may be jeopardized by a security event or other event hazardous to personnel.

1.17. Direct a staff member to perform initial and continuous personnel accountability of the TSC, OSC and CR personnel as stipulated in, Appendix A, Personnel Accountability Check, and OP 3524 guidance. (circle event) A S G ____/____ _____

1.18. When notified by Security that the initial accountability check has been completed, contact the SRM at the EOF to report status (including any missing personnel). ____/____ _____

Time/Date Initials

1.19. IF any persons are reported missing during the accountability checks, THEN perform the following steps:

1.19.1. Page the unaccounted for individual(s) in an attempt to locate them,

1.19.2. Verify missing person has not reported to GHH as part of on-site evacuation.

1.19.3. As necessary, direct the OSC Coordinator to dispatch an on-site search and rescue team to locate the individual(s), and,

1.19.4. Inform the Security Access Control Officer once the individual(s) are located.

1.20. Once accountability is complete, make decision regarding further disposition of company and contractor evacuees, either to stand by or leave the site completely.

NOTE

If ERFIS is not available, the assigned individual (in Step 1.19) will also relay appropriate meteorological and radiological information to the Radiological Assistant at the EOF.

1.21. When necessary, assign an individual to report to the Control Room to relay appropriate radiological information to the RP Checkpoint.

(circle event)
A S G

_____/_____ _____

1.22. Direct and coordinate the on-site assistance team activities as follows:

1.22.1. Prioritize job tasks to be implemented with the SS/PED, and OSC Coordinator, if staffed.

1.22.2. Ensure that the applicable work control process defined in AP 0021, "Work Orders", is used.

1.22.3. Authorize emergency dose commitments for required job tasks in accordance with OP 3507, "Emergency Radiation Exposure Control."

	Time/Date	Initials
1.22.4. Obtain periodic updates of job tasks implemented.		
1.22.5. Periodically re-evaluate job priorities to mitigate the emergency condition and prevent or minimize release of radioactive material.		
1.23. Ensure that a licensed individual reviews and approves all 10 CFR 50.54(x) considerations. Document any 10CFR50.54(x) considerations made in TSC Log Book.	____/____	_____
1.24. When informed by the SRM that the EOF/RC is activated, make the announcement over the plant paging system that the EOF is activated. ("Attention in the Plant, attention in the Plant. The Emergency Operations Facility and Recovery Center is activated. Repeat the Emergency Operations Facility and Recovery Center is activated.") (Repeat)	(circle event) A S G ____/____	_____

2.0 Subsequent Actions

NOTE

Activation of the TSC and the EOF constitutes an ALERT per AP 3125.

2.1. Initiate the escalation of the emergency classification as conditions warrant. IF conditions warrant escalation to a GENERAL EMERGENCY, THEN implement OP 3511, "Off-Site Protective Action Recommendations."	(circle event) A S G ____/____	_____
2.2. If warranted, ensure that manpower and planning is being conducted to provide for response efforts over an extended period.	(circle event) A S G ____/____	_____
2.3. If the NRC requests an open, continuous ENS communications channel (FTS ENS Phone), assign a technically competent individual to continuously maintain the FTS ENS Phone (LAI-801).	(circle event) A S G	
Name:_____	____/____	_____
2.4. Notify the Control Room that the TSC is assuming responsibility for transmitting plant parameter sheets to the EOF. (VYOPF 3504.02)	____/____	_____

	Time/Date	Initials

2.5. After consultation with the OSC Coordinator, notify the Control Room that the TSC is assuming responsibility for deployment of the AOs. ____/____ _____

NOTE

Refer to OP 3504 to establish the HPN channel.

2.6. If the NRC requests an open, continuous Health Physics Network (HPN) Communications Channel, assign a technically competent individual to continuously maintain the HPN phone until relieved by the EOF staff (LAI-801). (circle event) A S G

Name:_____ ____/____ _____

2.7. Provide continuous technical support and assistance to the Site Recovery Manager concerning Emergency Action Levels (EALs) and emergency classifications changes (INS8626-02).

2.8. Transfer status information to the Site Recovery Manager as appropriate.

2.9. Verify that continuous accountability per Appendix A, Step 5 is maintained. IF any persons are reported missing during the accountability checks, THEN perform Step 1.19 in the Immediate Actions Section. ____/____ _____

LPC 1

NOTE

Ensure that the status boards are updated frequently, and units of measurement are specified.

2.10. Using Appendix B, brief the TSC staff periodically on the status of the emergency and pertinent plant conditions.

2.11. Engage in periodic discussion with the SS/PED to maintain up-to-date plant status/priorities and review intended plans.

2.12. If deemed necessary to request emergency assistance from the General Electric BWR Emergency Support Program, refer to OP 3504 (SIL0324R3). ____/____ _____

VERMONT YANKEE NUCLEAR POWER STATION

OPERATING PROCEDURE

OP 3534

REVISION 4

POST ACCIDENT SAMPLING OF PLANT STACK GASEOUS RELEASES

USE CLASSIFICATION: **CONTINUOUS**

LPC No.	Effective Date	Affected Pages

Implementation Statement: N/A

Issue Date: 09/27/2002

TABLE OF CONTENTS

PURPOSE

To outline the special procedures necessary to collect samples of plant vent stack gaseous releases, perform analyses and interpret results during post accident conditions.

No Technical Specifications Sections apply to this procedure.

DISCUSSION

Plant vent stack gaseous effluents are sampled and analyzed to determine actual release mixtures and concentrations of radioactive materials being discharged to the environment during accident conditions. This information is then utilized to determine dose impact to the public.

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 Chemistry 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.

Table 1 is 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 this table is generated from design basis accident assumptions and this fact should be taken into account in the use of this table.

VYOPF 3534.02, Sample Accountability Log shall be utilized to track the location of emergency samples collected in accordance with this procedure. Stack sampling kit inventory is controlled by OP 3506, Emergency Equipment Readiness Check.

In accordance with AP 6002, Preparing 50.59 Evaluations, the results of an Applicability Determination (AD) has determined that an AD is not required for future changes provided the procedure scope is not changed. The basis for this conclusion is that this document is an Emergency Implementing Procedure and is subject to 10CFR50.54(q) to determine if the changes decrease the effectiveness of the Emergency Plan and if they have the potential to affect our ability to meet the standards of 10CFR50.47(b) and the requirements of 10CFR50 Appendix E.

ATTACHMENTS

1.	VYOPF 3534.01	Post Accident Stack Sampling
2.	VYOPF 3534.02	Stack Sample Accountability Log
3.	Appendix A	Deleted
4.	Table 1	VY-Dose Rates (R/hr) at Different Sampling Stations at Different Times After Shutdown[c]

REFERENCES AND COMMITMENTS

1. Technical Specifications and Site Documents

   a. None

2. Codes, Standards, and Regulations

   a. None

3. Commitments

   a. None

4. Supplemental References

   a. "Assessment of the Vermont Yankee High-Range Particulate and Iodine Stack Monitor" Rev. 1, Science Applications International Corporation, Rockville, Md. dated December 7, 1984 (iodine plate-out factor)
   b. NUREG 0737, Sec. II.B.3
   c. OP 0642, Sample Valve Lineup and Control
   d. OP 2611, Stack Effluent Sampling and Analysis
   e. DP 2630, Analytical Instrumentation
   f. DP 2631, Radiochemical Instrumentation
   g. OP 3506, Emergency Equipment Readiness Check
   h. OP 3510, Off-Site and Site Boundary Monitoring
   i. OP 3536, In-Plant Air Sample Analysis with Abnormal Conditions
   j. AP 6807, Collection, Temporary Storage and Retrieval of QA Records

PRECAUTIONS/LIMITATIONS

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

2. High levels of Kr^{88} may cause an interference with I^{131} identification. If this is suspected, purge sample if possible or count sample again at a later time.

PREREQUISITES

1. Stack Post Accident Sampling Kit.

2. Copy of OP 2611, Stack Effluent Sampling and Analysis.

3. Stack PASS valves lined up according to OP 0642, Sample Valve Lineup and Control (18 month Surveillance requirement).

4. Take a dose rate meter.

5. Evaluate whether or not respiratory protection should be worn during sampling.

6. Evaluate with RP whether or not extremity dosimetry and high range pocket dosimeters should be worn during sampling.

7. Dose commitment limits have been established and should be adhered to for all Post Accident Sampling. Consult with the OSC Coordinator for specific instructions. Table 1 should be consulted by the OSC Coordinator and sample team members for information concerning expected dose rates.

PROCEDURE

A. Low Dose Rate Stack Iodine/Particulate and Gas Sampling

1. If dose rates permit, (<1 R/hr at Stack Victoreen Room door or dose commitment has been established) the samples will be taken the same as the routine stack iodine/particulate and gaseous grab samples utilizing OP 2611, except as specified below, otherwise proceed to Section B.

   a. No background determination will be made during post accident sampling.

   b. A dose rate will be determined on the gas grab container and filter holder prior to removal of the samples. A dose commitment (review Table 1) will be established by the OSC Coordinator for this sample prior to the sample being removed. The dose rate will be used to determine that the dose commitment will not be exceeded. If it appears from the dose rate survey that the dose commitment will be exceeded, the sample should not be taken until the need for the sample is re-evaluated.

   c. A vehicle should be used to transport the samples from the stack to the point of analysis to maximize the distance between the sample and the person doing the sampling and to minimize the transport time. A shield may be used to minimize the exposure rate during transportation (e.g., concrete blocks or lead blankets etc., in car trunk).

d. If the Main Chemistry Lab and Counting Room are accessible, the sample will be taken to the Main Chemistry Lab and placed in an isolated area.

e. The noble gases should be purged from the charcoal cartridge prior to counting using plant air, bottled air or nitrogen. A purge rate and duration should be utilized to approximately equal 1 cfm for 10 minutes.

f. Count samples per Section D.

g. If the Chemistry Lab and Counting Room are not accessible, the charcoal cartridge can be purged as in Step e. above and counted using an RM-14 as in OP 3510, a SAM-II (outlined in Section E) or transported to an off-site multi-channel analyzer for analysis. The particulate filter can be counted this way also but need not be purged prior to counting.

B. High Dose Rate Post Accident Iodine/Particulate Sampling using a Silver Zeolite Cartridge at the Stack Post-Accident Sampling Panel

INITIALS

NOTE

Continuous sampling can be established by replacing the cartridge/filter assembly at periodic time intervals. This practice will be initiated and terminated at the request of the PED or TSC Coordinator in consultation with the Chemistry Manager or RP Manager.

1. Ensure a dose commitment has been established prior to the sample being drawn. _____

2. Notify the OSC of intent to sample. _____

CAUTION

If sample dose rates are greater than 1 R/hr, consider using the lead shielded pig.

3. Obtain a loaded filter holder, tongs, and evacuated 14 ml vial and if required, lead shielded pig for transportation. Shield pig is in room west of stack base. _____

4. Obtain vehicle and portable radio, then proceed to stack base (vehicle not necessary if pig is not required). _____

5. Establish communication via portable radio with TSC. _____

INITIALS

6. Align the 3-way sample valve to allow through flow with the needle isolated. (SRS-2 at ⊤) _____

7. OPEN filter outlet (SRS-24) valve. _____

8. Ensure bypass valve (SRS-25) is CLOSED. _____

9. Note time and start pump by turning switch ON. _____

   a. Record start time on VYOPF 3534.01 _____

CAUTION

Dose rates will increase when flow is established. Do not exceed established dose commitment. If it appears that dose commitment will be exceeded, notify OSC Coordinator for further instructions.

10. Adjust flow through rotometer to approximately 452 cc/min. _____

    a. Record pressure gauge reading and flow rate on VYOPF 3534.01. _____

11. Run pump for 10 minutes. _____

12. Disengage inlet quick disconnect. Note time. _____

13. Record Stop Time on VYOPF 3534.01. _____

14. Run pump for 15-30 sec. to purge gases from holder. (Sampling times may vary due to radionuclide concentrations.) _____

WARNING

DOSE RATES ON FILTER HOLDER MAY BE HIGH. USE TONGS TO REMOVE FILTER HOLDER TO MINIMIZE EXPOSURE TO EXTREMITIES.

15. Disengage outlet quick disconnect. _____

16. Remove filter holder. _____

17. Secure pump. _____

18. Close valve SRS-24. _____

INITIALS

19. Log all samples on VYOPF 3534.02 for accountability. _____

20. Place filter holder assembly into lead shield pig and place pig in back of vehicle (if pig is required). _____

21. Install a fresh filter holder assembly onto panel. _____

22. Return samples to the Chemistry Lab. _____

NOTE

Multiple samples may be requested per contact with TSC.

C. Gas Sampling

NOTE

Vials can be evacuated in lab prior to sampling or by using hand vacuum pump.

1. Perform Steps B.1 through B.5 above. _____

2. Align the 3-way sample valve to allow through flow with the needle isolated. (SRS-2 at ⊤) _____

3. OPEN bypass (SRS-25) valve. _____

4. Start pump, wait for line to purge ~30 sec. _____

5. Place evacuated vial (14 ml gas bottle) on top of hypodermic needle. _____

6. Rotate the 3-way sample valve clockwise 90° to allow flow from the inlet to the needle and isolating the discharge. (SRS-2 at ⊣) _____

WARNING

DOSE RATES ON SAMPLE VIAL MAY BE HIGH. IT MAY BE NECESSARY TO USE TONGS AND/OR SHIELDED TRANSPORT CART TO MINIMIZE EXPOSURE.

7. After the pressure indicator equilibrates near zero, using tongs remove the sample vial and place in lead pig (if used). _____

INITIALS

8. Immediately rotate the 3-way sample valve 180° to purge the needle (SRS-2 at ⊢) _____

9. Record sample time on VYOPF 3534.01. _____

10. After at least 10 seconds, rotate the 3-way valve clockwise 90°. (SRS-2 at ⊤) _____

11. CLOSE bypass valve (SRS-25). _____

12. Secure the pump. _____

13. Place sample in pig (if pig is used) in back of vehicle and return samples to the Chemistry Lab for analysis. _____

D. Sample Analysis with MCA Operable

1. Iodine and particulate filters

a. Prepare and count samples per OP 0631 (dead time limit <20%) or Section E (High Activity....) as applicable based on dead time:

1) Separate the particulate and cartridge filters.

2) Wrap samples to secure activity.

3) Count particulate filter 500 seconds (minimum) as "General" isotopic to obtain results as μCi/cc.

4) Count the cartridge 250 seconds (minimum) per side as "General" isotopic to obtain results as μCi/cc.

5) Multiply iodine results from the previous step by 1.67 (plate out correction factor for stack PAS sampler - (References 3.a)).

2. Gas Samples

a. Count the gas grab sample 500 seconds (minimum) as "General" isotopic to obtain results as μCi/cc.

b. If the dead time on the MCA is >20%, remove aliquot sample to achieve <20% dead time.

INITIALS

3. Report all results as µCi/cc to the OSC Coordinator. _____

4. Submit VYPOF 3534.01 to OSC Coordinator. _____

5. Log all samples on VYOPF 3534.02 for accountability. _____

E. Sample Analysis with MCA Inoperable

NOTES

- If it is necessary to do Plant Vent Stack gas sampling with the MCA out of service, accurate iodine results can be achieved by analyzing the iodine cartridge as follows.
- If Silver Zeolite cartridges are used, purging is not necessary.

1. Purge the noble gases from the charcoal cartridge per Section A.1.e). _____

2. Wrap the charcoal/zeolite cartridge to protect the detector from contamination. _____

3. Deliver to Radiation Protection personnel for analysis using the SAM II per OP 3536. _____

4. Obtain sample analysis net count per minute and SAM II efficiency. _____

5. Calculate the iodine-131 concentration as follows:

$$I^{131}\ \mu Ci/cc = \frac{(C)(4.5 \times 10^{-10})}{(E)(V)(T)}$$

_____

Verified by: _____

Where:
- C = Net counts (cpm) (sample counts-background counts)
- E = Efficiency
- V = Flow rate of sample (liters/min)
- T = Duration of sample (min)

4.5×10^{-10} = Constant

INITIALS

6. Use of Silver Zeolite Sampler Cartridges

   a. If I^{131} concentration calculated in Step E.5 (from above) is greater than or equal to 1×10^{-6} µCi/cc I^{131}, then resample and verify results using silver zeolite cartridge (except omit purge step outlined in Step E.1. _____

   Verified by: _____

   b. Report results to OSC Coordinator and record results in logbook. _____

7. Log all samples on VYOPF 3534.02 for accountability. _____

F. Counting Techniques for Highly Radioactive Samples

> **NOTE**
>
> If sample size or dilutions can be used to permit a sample to be counted by conventional techniques, this should be done. If this is not possible, the following techniques can be used.

1. 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% germanium detector. _____

   b. Using rod and holder, suspend the sample above the detector at a distance that will give a dead time of <20% (must be >1 ft.). _____

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

   d. Count the sample using a 2" filter paper geometry efficiency. _____

INITIALS

NOTE

Step e. or f. below may be used to calculate sample activity.

e. Analyze the sample using the MCA selection for "PASS Elevated Samples"

OR

f. Calculate the sample activity as follows:

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

NOTE

The below correction factor must be re-evaluated if the detector geometry for the filter paper with a 2" shelf is modified at the time the efficiency calibration (DP 2631) is performed.

where: X = μCi/ml from isotopic printout
d = distance in ft. measured in E.1.c above
17 = correction factor μCi/ml

_____

Verified by: _____

2. Use of portable instruments.

NOTE

If neither conventional methods or those in Step F.1 can be used, portable gamma survey meter can be used to determine sample activities.

a. 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.

b. Measure the radiation level of the sample at 1 meter.

c. Calculate the sample activity as follows:

$$\mu Ci/ml = \frac{(R/hr \text{ at } 1 \text{ meter})(10^6)}{(T)\ (V)}$$

where: 10^6 = $\mu Ci/Ci$
V = sample volume (milliliters)
T = R/hr @ 1 meter/Ci

Values for T (R/hr @ 1 meter/Ci)

Time	Degassed Liquid*	Containment Air**
1 hr	0.60	0.41
4 hr	0.43	0.28
8 hr	0.35	0.22
12 hr	0.31	0.18
24 hr	0.26	0.14

*Assumed mix of 0% of core noble gas inventory, 50% of core halogen inventory and 1% of core solids inventory. For convenience, the mix ratio is expressed as 00/50/1 (% NOBLE GAS/% HALOGENS/% SOLIDS)

**Assumed mix of 100/50/1.

FINAL CONDITIONS

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

2. If any portion of the PASS Panel is found to be inoperable, submit a Work Order and report the problem at the daily Operations Planning meeting.

POST ACCIDENT STACK SAMPLING

FROM SECTION B AND C

INITIALS

HIGH DOSE RATE POST ACCIDENT IODINE AND PARTICULATE SAMPLING USING A SILVER ZEOLITE CARTRIDGE AT STACK POST-ACCIDENT SAMPLING PANEL

1. Record the following:
   Flow rate_cc/min
   Start Time_____
   Stop Time_____
   Total Time_____min
   Sample Volume = Total time x Flow rate = _____cc. _____

2. Record Pressure Gauge reading:

   Pressure _____in Hg _____

3. Record results or attach isotopic printout form. _____

4. Multiply iodine results from previous step by 1.67 plate out factor. Record results on printout. _____

5. Copy all printouts and this form and retain for filing. _____

6. Report all results to the OSC Coordinator or their Assistant. _____

GAS SAMPLE

1. Record sample time:_____ _____

2. Log all samples on VYOPF 3534.02 for accountability. _____

3. Attach isotopic printout form. _____

4. Copy all printouts and this form and retain for filing. _____

5. Report all results to the OSC Coordinator or their Assistant. _____

Review by:_____
OSC Coordinator's Assistant

STACK SAMPLE ACCOUNTABILITY LOG

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

TABLE 1

VY - DOSE RATES (R/hr) AT DIFFERENT SAMPLING STATIONS AT DIFFERENT TIMES AFTER SHUTDOWN[c]

Time (hr)	Post-Accident Sampling Station	Containment Air Sampling Station	Vent Stack Sampling Room
1	4.5E-1[a]	6.0E+0[a]	1.0E+0[b]
3	1.9E-1	2.6E+0	5.1E-1
8	5.4E-02	1.1E+0	2.2E-1
24	6.8E-03	4.7E-1	5.8E-02
72	4.1E-03	3.1E-1	1.8E-02

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.

10 CFR 50.54(q) Evaluation Checklist

List of Emergency Plan Section(s)/Emergency Plan Implementing Procedure(s) or any other document to be evaluated. (Include Title and Revision No.):

OP 3534, Rev 4, Post Accident Sampling of Plant Stack Gaseous Releases

A. Screening Evaluation

Based on a review of the following questions, determine if the change has the potential to affect our ability to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR 50.

A "YES" answer to any part of the questions requires that a written evaluation be done to determine whether the effectiveness of the Emergency Plan was decreased as specified in Section B of this checklist.

A "NO" answer to all questions requires no written evaluation as specified in Section B of this checklist.

1. Could the proposed change affect our ability to meet the following standards of 10 CFR 50.47(b):

(1) Assignment of Emergency Response Organization responsibilities — YES (NO)

(2) Assignment of on-shift Emergency Response Organization personnel — YES (NO)

(3) Arrangements for Emergency Response Support and Resources — YES (NO)

(4) Emergency Classification and Action levels, including facility system and effluent parameters — YES (NO)

(5) Notification Methods and Procedures — YES (NO)

(6) Emergency Communications among principal response organizations and the public — YES (NO)

(7) Public Education and Information — YES (NO)

(8) Adequacy of Emergency Facilities and Equipment — YES (NO)

(9) Adequacy of Accident Assessment methods, systems and equipment — (YES) NO

(10) Plume exposure pathway EPZ protective actions — YES (NO)

(11) Emergency Worker Radiological Exposure Control — YES (NO)

(12) Medical Services for contaminated injured individuals — YES (NO)

(13) Recovery and Reentry Plans — YES (NO)

(14) Emergency response periodic drills and exercises — YES (NO)

(15) Radiological Emergency Response Training — YES (NO)

(16) Plan development, review and distribution — YES (NO)

2. Could the change affect our ability to meet the following requirements of Appendix E to 10 CFR 50.

(1) Section IV. A - Organization	YES (NO)
(2) Section IV. B - Assessment Actions	(YES) NO
(3) Section IV. C - Activation of Emergency Organizations	YES (NO)
(4) Section IV. D - Notification Procedures	YES (NO)
(5) Section IV. E - Emergency Facilities and Equipment	YES (NO)
(6) Section IV. F - Training	YES (NO)
(7) Section IV. G - Maintaining Emergency Preparedness	YES (NO)
(8) Section IV. H - Recovery	YES (NO)

B. Effectiveness Determination

For each applicable (i.e., a "yes" answer specified) standard to 10 CFR 50.47(b) and Appendix E to 10 CFR 50 identified from Section A above, complete the evaluation form below to determine whether the change decreases the effectiveness of the Emergency Plan and whether it continues to meet the stated applicable standard or requirement.

A facsimile of the evaluation form may be used as needed and attached to this checklist.

For applicable item 10 CFR 50.47(b)(9) & App. E Section IV.B of Section A above, this change (DOES/DOES NOT) decrease the effectiveness of the Emergency Plan and (DOES/DOES NOT) continue to meet the stated applicable standard or requirement.

BASIS FOR ANSWER: The changes made to the procedure were to add formality to the steps. The 8 procedures steps were corrected to reflect how the sampling is actually done. The intent of this procedure has not changed.

10 CFR 50.54(q) Evaluation Checklist (Continued)

C. Conclusion (Fill out appropriate information)

☑ The changes made do not decrease the effectiveness of the Emergency Plan and continue to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR 50.

☐ The changes made do decrease the effectiveness of the Emergency Plan and decrease our ability to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR 50. The following course of action is recommended:

- ☐ Revise proposed changes to meet applicable standards and requirements.
- ☐ Cancel the proposed changes.
- ☐ Process proposed changes for NRC approval prior to implementation in accordance with 10 CFR 50.54(q).

D. Impact on Other Documents (TRM, Tech Specs)

Keywords used in search: _____

☑ This change does not affect any other documents.

☐ This change does affect other documents.

Document(s) affected: _____

Section(s) affected: _____

E. Impact on the Updated FSAR

Use AP 6036 to determine if the proposed E-Plan change modifies existing UFSAR information or requires the addition of new UFSAR information and initiate UFSAR change(s) as required.

Keywords used in UFSAR search: _____

Additional Comments:

These changes reflect actual practice of sampling and do not change intent of procedure nor decrease the effect.

Prepared By: Audra Williams Audra Williams Date: 5-23-02
(Print/Sign)

Reviewed By: Lori A. Tkaczyk Lori A. Tkaczyk Date: 6/9/02
(Emergency Plan Coordinator) (Print/Sign)

VERMONT YANKEE NUCLEAR POWER STATION

OPERATING PROCEDURE

OP 3533

REVISION 6

POST ACCIDENT SAMPLING OF REACTOR COOLANT

USE CLASSIFICATION: **CONTINUOUS**

LPC No.	Effective Date	Affected Pages

Implementation Statement: N/A

Issue Date: 09/27/2002

TABLE OF CONTENTS

PURPOSE

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

Primary containment integrity issues are addressed in Technical Specifications section 3.7.

DISCUSSION

Post accident sampling and analysis of reactor coolant is performed to provide information on the nature and extent of fuel damage, boron concentration following SLC injection and damage information on other in-core components such as control rods. NUREG-0737 requires a combined time of 3 hours or less for sampling and selected analyses from the time the decisions is made to collect a sample (TSC).

During post accident conditions, samples of reactor coolant may be highly radioactive. Because of the high radiation levels, these samples require special handling. This procedure outlines the special handling required. The Chemistry Manager is assigned responsibility for implementation of this procedure.

In addition to the above concerns, conductivity readings of the reactor coolant may be useful during an accident. Readings can be obtained in the Control Room up to 10 μmho/cm; if exceeded, conductivity readings may be taken at a later date at the discretion of the Chemistry Manager.

During certain postulated accidents, the availability of on-site counting equipment may be compromised. In these instances, post accident samples may be counted at alternative laboratories. 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, 3 and 4 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 3533.02, Sample Accountability Log shall be utilized to track the location of emergency samples collected in accordance with this procedure.

In accordance with AP 6002, Preparing 50.59 Evaluations, the results of an Applicability Determination (AD) has determined that an AD is not required for future changes provided the procedure scope is not changed. The basis for this conclusion is that this document is an Emergency Implementing Procedure and is subject to 10CFR50.54(q) to determine if the changes decrease the effectiveness of the Emergency Plan and if they have the potential to affect our ability to meet the standards of 10CFR50.47(b) and the requirements of 10CFR50 Appendix E.

ATTACHMENTS

1.	Figure 1	Post Accident Sampler
2.	Figure 2	Post Accident Sampling System
3.	VYOPF 3533.01	Reactor Coolant PASS Data/Analysis
4.	VYOPF 3533.02	RV PASS Sample Accountability Log
5.	Appendix A	Reactor Coolant Sampling and Analysis - RB 303' Sample Sink
6.	Appendix B	Operation of the PASS to Sample Reactor Coolant
7.	Appendix C	Flushing and Restoring the PASS Following Use
8.	Appendix D	PASS Sample Analysis
9.	Appendix E	Deleted
10.	Table 1	VY Radioactivity Concentration (μCi/g) in Reactor Coolant Based on Design Basis Source Term (100/50/1)
11.	Table 2	VY Dose Rates (R/hr) at Different Sampling Stations at Different Times After Shutdown
12.	Table 3	VY Reactor Coolant and Containment Air Samples Dose Rates (R/hr) at Different Times After Shutdown
13.	Table 4	VY Reactor Coolant and Containment Air Samples Dose Rates (R/hr) at Different Times after Shutdown

REFERENCES AND COMMITMENTS

1. Technical Specifications and Site Documents

   a. TS 3.7
   b. UFSAR, Section 10.20

2. Codes, Standards, and Regulations

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

3. Commitments

   a. None

4. Supplemental References

   a. EDCR 97-407 on FCV-39 and FCV-40
   b. OP 0630, Water Chemistry
   c. OP 0634, Operation of the Dionex Ion Chromatograph
   d. DP 0647, Operation of the Perkin Elmer Autosystem XL Gas Chromatograph
   e. DP 2630, Analytical Instrumentation
   f. DP 2631, Radiochemical Instrumentation
   g. OP 3506, Emergency Equipment Readiness Check
   h. OP 4612, Sampling and Treatment of the Reactor Water System
   i. AP 6807, Collection, Temporary Storage and Retrieval of QA Records

PRECAUTIONS/LIMITATIONS

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

2. High levels of Kr^{88} may cause an interference with I^{131} identification. If this is suspected, purge sample if possible or count sample again at a later time.

3. Be aware of the radiological concerns and RWP requirements. Dose rates during sampling could increase rapidly.

PREREQUISITES

1. Post accident sampling equipment and tools, as needed.

2. Dose rate meter.

3. Evaluate with RP whether or not respiratory protection should be worn during sampling.

4. Evaluate with RP whether or not extremity dosimetry and high range pocket dosimeters should be worn during sampling.

5. Maximum Dose Rate and Dose commitment limits have been established, if needed, and should be adhered to for all Post Accident Sampling. Consult with the OSC Coordinator for specific instructions. Tables 3 and 4 should be consulted by the OSC Coordinator and sample team members for information concerning expected dose rates.

PROCEDURE

A. Reactor Coolant Sampling and Analysis - RB 303' Sample Sink

NOTE

Sampling the reactor coolant at the RB 303' sample sink is only allowed if the Reactor Building is accessible with acceptable dose rates. If the RB is not accessible, sample the Reactor Coolant at the PASS panel per Appendix B of this procedure.

1. Utilize Appendix A to sample and analyze the Reactor Coolant via the RB 303' sample sink.

2. IF serial dilutions of the sample are required during analysis, THEN

   a. Indicate dilution factor (see nomenclature in A.2.b., below) and resultant volume on VYOPF 3533.02, AND

   b. Identify each dilution sample as the sample identification followed by the dilution factor in parentheses (e.g., RV(20:1) or serially RV(20:1)(100:1)).

B. Operation of the PASS to Sample Reactor Coolant

NOTE

Chemistry Emergency Equipment Readiness Check is maintained per VYOPF 3506.05.

1. Utilize Appendix B to sample the Reactor Coolant via the PASS Panel.

2. IF serial dilutions of the sample are required during analysis, THEN

   a. Indicate dilution factor (see nomenclature in B.2.b., below) and resultant volume on VYOPF 3533.02, AND

   b. Identify each dilution sample as the sample identification followed by the dilution factor in parentheses (e.g., RV(20:1) or serially RV(20:1)(100:1)).

C. Flushing and Restoring the PASS Following Use

1. Utilize Appendix C to flush and restore the PASS Panel following use.

D. PASS Sample Analysis

1. Utilize Appendix D to analyze the PASS liquid and gas samples.

2. Make a copy of VYOPF 3533.01 and any printouts and retain for filing.

3. Submit original VYOPF 3533.01 and printouts to the OSC Coordinator or OSC Assistant.

FINAL CONDITIONS

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

2. Report all results to the OSC Coordinator or Assistant.

3. If any portion of the PASS Panel is found to be inoperable, submit a high priority Work Request.

FIGURE 1

POST ACCIDENT SAMPLER

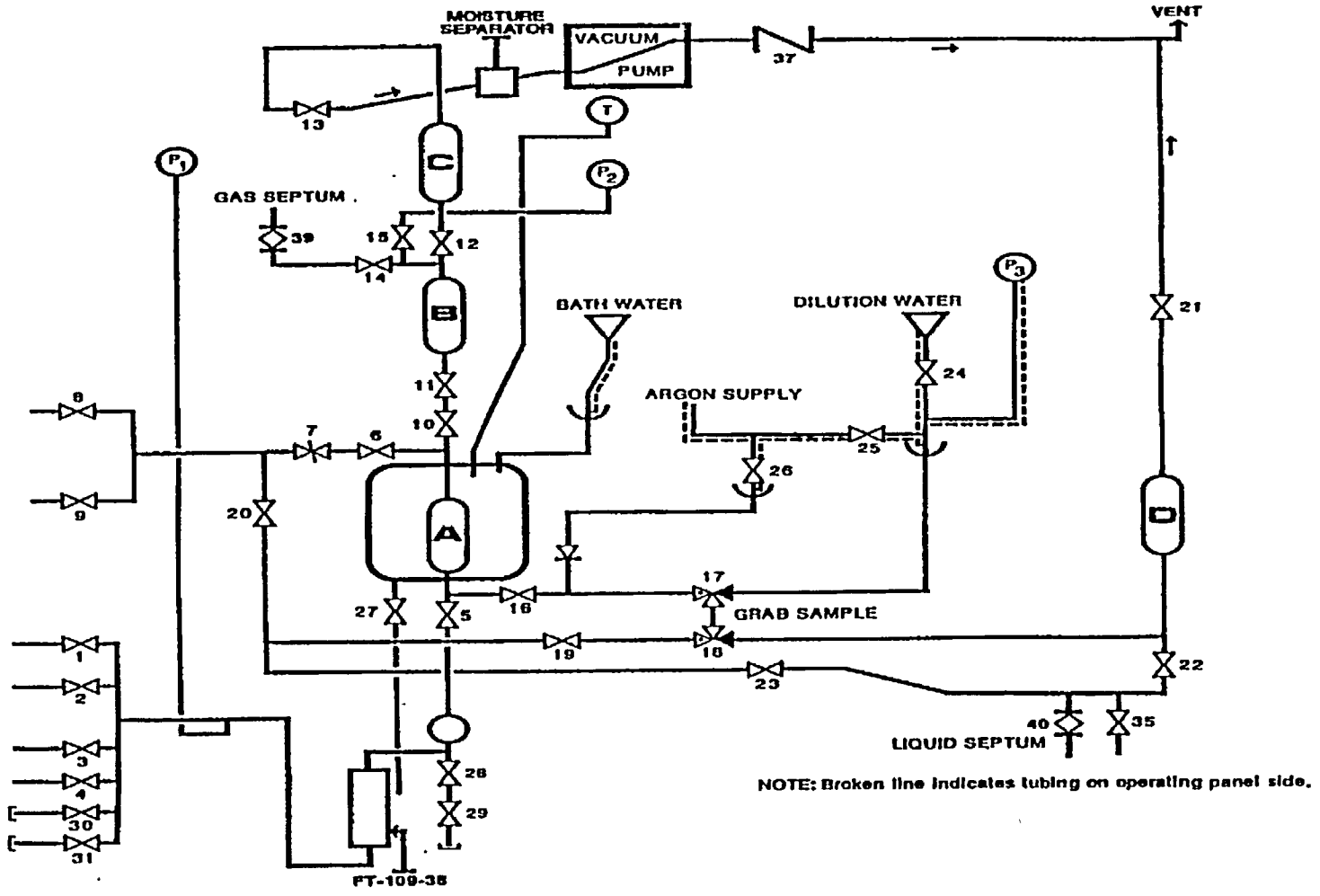

Figure 1
OP 3533 Rev. 6
Page 1 of 1

FIGURE 2

POST ACCIDENT SAMPLING SYSTEM

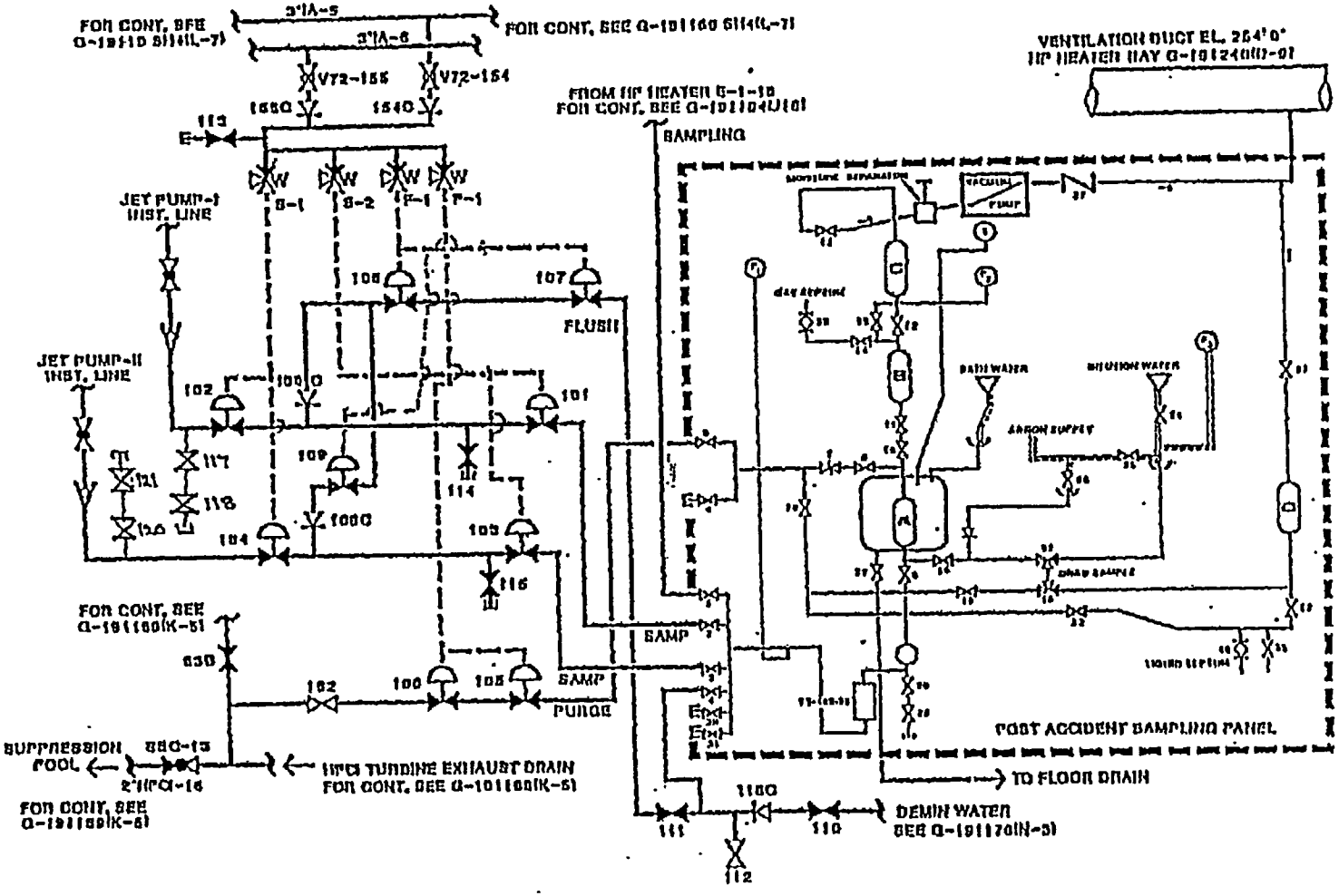

Figure 2
OP 3533 Rev. 6
Page 1 of 1

REACTOR COOLANT PASS DATA/ANALYSIS
(For Use with Appendix B and D)

SAMPLE DATA: Date _____ Time _____ By _____

DILUTION WATER VOL: _____ ml

GAS: High (Cyl B and C) OR Low Activity (Cyl B) (CIRCLE ONE)

****

I. GASEOUS Analyses from PASS RV System:

A. Gas Sample correction factor when diluting with carrier gas (CIRCLE ONE):

1. If App. B. Step F.3.a.1) is performed (high activity, Cyl B and C) CF=29

OR

2. If App. B. Step F.3.a.2) is performed (low activity, Cyl B only) CF=7.2

BASIS: $\frac{Vol_B + Vol_C}{Mass_A} = CF$

$Vol_B = 329$ cc
$Vol_C = 1005$ cc
$Mass_A = 46$ g

B. Hydrogen Concentration

Input Needed: 1) Hydrogen concentration (from analysis as decimal) _____ H_2conc

2) Gas Sample CF (from I.A) _____ CF

1. Calculate H_2 concentration in Reactor Coolant:

14* X H_2conc X CF = Coolant Hydrogen Concentration in Coolant

*14 = volume of offgas vial in cc

_____ X _____ X _____ = _____ cc H_2 per g. Rx Coolant

2. Attach printouts to this form.

C. Oxygen Concentration

Input Needed: 1) Oxygen concentration (from analysis as decimal) _____O2conc

2) Gas Sample CF (from I.A) _____CF

1. Calculate O2 concentration in Reactor Coolant:

14* X O_2conc X CF = Coolant Oxygen Concentration in Coolant

*14 = volume of offgas vial in cc

_____ X _____ X _____ = _____ cc O2 per g. Rx Coolant

2. Attach printouts to this form.

D. GASEOUS Isotopic Analysis

Input Needed: 1) Gas Sample CF (from I.A) _____CF

1. Calculate volume of gas to be analyzed on MCA:

$$\frac{1}{CF \times 14} = \_\_\_\_\_ \text{ cc (enter as MCA sample volume)}$$

2. Attach isotopic printout to this form. Results are µCi/cc of gas per gram of Rx coolant.

II. LIQUID Analyses from PASS RV System:

A. Calculate sample PASS Dilution factor (DF_{Pass}):

Input Needed: PASS Dilution Water volume _____VDIL ml

$$\frac{V_{DIL}}{0.5 \text{ ml}} = DF_{Pass} \qquad \frac{\_\_\_\_\_}{0.5} = \_\_\_\_\_ \; DF_{Pass}$$

B. Chloride Concentration

NOTE

A lab dilution may be required for this analysis due to the small initial sample size.

1. Calculate lab dilution factor (DF_{Lab}):

$$DF_{Lab} = \frac{\text{Final Volume (ml)}}{\text{Aliquot (ml)}} \qquad \frac{\text{(ml)}}{\text{(ml)}} = \_\_\_\_\_ DF_{Lab}$$

2. Analyze sample with IC.

3. Calculate chloride concentration in coolant:

   Input needed: DF_{Pass} from II.A. and analysis result.

   Analysis (ppb) X DF_{Pass} X DF_{Lab} = Coolant Cl^- (ppb)

   _____ ppb X _____ X _____ = _____ ppb coolant Cl^-
   (analysis)

4. Attach any printout to this form.

C. Boron Concentration

NOTE

A lab dilution may be required for this analysis due to the small initial sample size.

1. Calculate lab dilution factor (DF_{Lab}):

$$DF_{Lab} = \frac{\text{Final Volume (ml)}}{\text{Aliquot (ml)}} \qquad \frac{\text{(ml)}}{\text{(ml)}} = \_\_\_\_\_ DF_{Lab}$$

2. Analyze sample with ICP or Titration (circle one).

3. Calculate BORON concentration in coolant:

   Input needed: DF_{Pass} from II.A. and analysis result.

Analysis (ppb) X DF_{Pass} X DF_{Lab} = Coolant Boron (ppb)

_____ ppb X _____ X _____ = _____ ppb coolant Boron (analysis)

4. Attach any printout to this form.

D. LIQUID Isotopic Analysis

1. Calculate corrected sample volume for MCA analysis entry:

Input needed: DFPass from II.A.

$$\frac{\text{Aliquot (ml)}}{DF_{Pass}} = \text{Corrected sample vol. for MCA entry}$$

$$\frac{\text{(ml)}}{DF_{Pass}} = \text{\_\_\_\_\_ ml (corrected vol)}$$

2. Attach any printout to this form.

Reviewed By:_____
OSC Coordinator's Assistant (Print/Sign)

RV PASS SAMPLE ACCOUNTABILITY LOG

Sample Identification	Location (Update after each movement)	Volume of Original Sample or Dilution	Date	Time	Initials

APPENDIX A

REACTOR COOLANT SAMPLING AND ANALYSIS - RB 303' SAMPLE SINK

NOTES

- Although this procedure is Continuous Use, each Appendix may be used individually and the entire procedure Does Not need to be in hand.
- The following procedure assumes the Reactor Building is accessible, otherwise utilize Appendix B to operate the PASS panel.
- Samples can be obtained from one of three points depending on what systems are in service. All sample points are at the Reactor Building sample sink. The sample points are:

  Reactor Cleanup System

  Reactor Recirc Loop A

  RHR System

CAUTION

A maximum dose rate and dose commitment (review Tables 2 and 3) will be established for this sample prior to it being taken. Dose rates will be monitored during sampling and if it appears the dose commitment will be exceeded, the sampling will be terminated until further evaluation.

A. Sampling of the Reactor Cleanup System

1. Refer to OP 4612.

B. Sampling of the Reactor Water System (Recirc Loop)

1. Request the OSC to CLOSE/VERIFY CLOSED V10-199A & B. _____

2. Request the OSC to:

   a. OPEN FCV-39 and FCV-40 isolation valves. _____

b. Notify Chemistry when valves are OPEN. _____

WARNING

EXPECT THAT RADIATION LEVELS WILL INCREASE AT THE SAMPLE SINK DURING THE SAMPLE PURGING AND SAMPLING. DO NOT STAY AT THE SAMPLE SINK TO WAIT FOR THE SAMPLE LINES TO PURGE. SEEK A LOW RADIATION AREA IN WHICH TO WAIT.

3. OPEN RSS-44B and RSS-60. _____

4. Draw samples per Steps D, E and F below. _____

5. Close RSS-44B and RSS-60.

C. Sampling of the RHR System (RB 303' Sample Sink)

1. Request the OSC to OPEN V10-198A or B. _____

2. OPEN RSS-160/161 (common switch at sample panel). _____

3. OPEN RSS-96. _____

4. Draw samples per Steps D, E and F below. _____

5. CLOSE RSS-96. _____

6. CLOSE RSS-160/161. _____

D. Sample lines must be purged prior to sampling to ensure a representative sample is taken. If the sample lines have not been running, they must be purged for 30 minutes at a rate of about 500 ml/minute prior to obtaining the sample.

_____

E. After the sample line is flushed, if a dissolved oxygen analysis is requested to be run, use a CHEMET or Orbisphere analyzer and run the analysis at the sample panel.

_____

F. As dose rates permit, obtain about a 50 ml sample or less for further analysis in the Chemistry Lab.

_____

G. Place the sample bottle in a carrier to maintain distance between you and the sample. Proceed promptly to the Chemistry Lab. _____

H. Once at the Chemistry Lab, place the sample behind a shield, as necessary, to reduce exposure. _____

I. If a RHR System sample was taken, request the OSC to CLOSE root valve V10-198A or B which ever was opened in Step C. _____

J. If a Recirc Loop sample was taken, request OSC to CLOSE FCV-39, FCV-40. _____

K. If a chloride analysis is required, use OP 0634 with a 1 ml sample volume diluted to 30 ml. (See A.2.b. to document dilution.) _____

L. If a pH analysis is required, insert the probe into the sample bottle while the bottle is still behind the shield and read the pH. _____

M. If an isotopic analysis is required, perform serial dilutions on 1 ml of the sample until standard counting techniques can be used. Do not exceed 20% dead time. (See A.1.b. to document dilution.) _____

N. If a boron analysis is required, refer to OP 0630. Use a small sample volume, preferably 1 milliliter with dilutions as needed. Use ICP if available. (See A.2.b. to document dilution.) _____

O. Report all results to the OSC Coordinator. _____

P. Log all samples on VYOPF 3533.02 for accountability. _____

APPENDIX B

OPERATION OF THE PASS TO SAMPLE REACTOR COOLANT

NOTE

Although this procedure is Continuous Use, each Appendix may be used individually and the entire procedure Does Not need to be in hand.

WARNING

FAILURE TO FOLLOW THESE PROCEDURES VERBATIM COULD RESULT IN DAMAGE TO THE SYSTEM OR PERSONNEL INJURY.

A. If the Gai-Tronics is unavailable, obtain a portable radio from the OSC. _____

B. Obtain the RV Post Accident Sample Kit from the Chemistry Lab. _____

C. Obtain a dose commitment from the OSC Coordinator for this sample prior to the start of sampling. _____

CAUTION

Do not exceed 900 ml of dilution water.

D. Obtain the following from Chemistry supervision:

1. Dilution water volume (Enter here and on VYOPF 3533.01)

   _____ml _____

2. Information as to whether high noble gas activity is present.

   HIGH / LOW (circle one here and on VYOPF 3533.01) _____

3. Request if a gas sample or gas stripping of the liquid sample is required. _____

4. PASS Diluted Liquid Sample volume desired:

   _____ml _____

E. Prerequisites for Sample Panel Set-Up

1. Perform the following:

a. Evacuate and label three off-gas vials; obtain one 2-dram vial and place in lead shield pig. _____

b. Obtain RV Pass Sample Kit. _____

CAUTION

Breaker 11 on AC-DP-5 affects primary containment isolation (PCIV) valves PAS-102/104 (PASS SW-1) and valves PAS-101/103 (PASS SW-2). Failure to maintain positive control of the breaker while primary containment integrity is required by Technical Specifications (plant other than in cold shutdown) could violate LCO 3.7.A.2.

c. Request the OSC to:

1) CLOSE Breaker 11 on AC-DP-5 located in Turbine Building Switchgear Room. _____

2) POST an Operator at Breaker 11 while the breaker is closed. _____

3) Notify the OSC that PASS panel operation may affect calibrated jet pump flow indicator FI-2-3-87A/C at CRP 9-4 (jet pumps 1 and 11) from transmitter FT-2-3-63A/C. _____

d. Notify the OSC when you are ready to leave for sampling. _____

1) Verify with the OSC that the breaker is closed. _____

CAUTION

If it appears maximum dose rate or dose commitment will be exceeded, leave high dose rate area and contact OSC Coordinator for further instructions.

2. Argon bottle is >500 psi with tank valve open. _____

3. CLOSE PAS-27. _____

4. Verify:

   a. Valves PAS-17 and PAS-18 (3-way valves) are positioned with the arrow pointing to the left. _____

   b. At the panel front, all other valves, with the exception of PAS-112, are in the CLOSED position. _____

   c. IF dose rates permit, PAS-32 (rear of panel) OPEN. _____

   d. IF dose rates permit, PAS-38 (rear of panel) CLOSED. _____

WARNING

PAS-112 MUST BE LEFT OPEN EXCEPT WHEN SPECIFIED HEREIN TO PRECLUDE CROSS-CONNECTION OF THE DEMIN WATER SYSTEM WITH THE REACTOR VESSEL.

5. Install new rubber septa on sample valves PAS-39 and PAS-40. _____

CAUTION

Do not exceed 900 ml of dilution water.

6. Place graduated cylinder under PAS-112 and OPERATE PAS-110 to obtain dilution water.

   a. Fill the dilution water funnel with the recommended volume of demineralized water. _____

F. Sample Panel Operation Instruction

1. Evacuate cylinders B and C and gas septum.

   a. START vacuum pump SW-5. _____

   b. OPEN valves PAS-12, PAS-13, PAS-14 and PAS-15. _____

   c. Run vacuum pump until approximately 0 psia reads on PI-2. _____

   d. CLOSE valve PAS-13. _____

e. STOP vacuum pump SW-5. _____

f. Check PI-2 is stable to ensure no leaks. _____

g. CLOSE PAS-12 and PAS-14. _____

2. Obtaining a coolant sample in Cylinder A.

NOTES

- Obtain sample from Reactor Vessel by following instructions in Section a. below unless otherwise instructed.
- To obtain sample from HP Heater, go to Section b. below.

a. Reactor Vessel Sampling (From JP-1 unless otherwise directed to sample JP-11)

1) OPEN SW-1 to open PAS-102/104 (inboard sample valves). _____

2) OPEN SW-2 to open PAS-101/103 (outboard sample valves). _____

3) OPEN SW-4 to open PAS-105/106 (purge valves). _____

CAUTION

If there is no pressure indication on PI-1 when sampling, it's possible the line may be plugged. Obtain sample from other reactor sample point and observe pressure indication on PI-1.

4) OPEN valve PAS-2 (for JP-1) or valve PAS-3 (for JP-11). _____

5) OPEN valves PAS-5, PAS-6 and PAS-8 on panel. _____

CAUTION

Keep pressure high enough to avoid flashing. Monitor area dose rates.

6) THROTTLE valve PAS-7 on panel to initiate flow to approximately 20 gph. Monitor pressure on PI-1 and flow on FI-109-36. Sample lines are now purging. _____

a) Record FI-109-36 flow:

_____gph _____

CAUTION

Retreat to low dose area during sample purge.

7) Perform the following calculation to determine purge time.

$$\frac{60\ \text{min}}{hr} \times \frac{12\ gallons}{gal/hr(Flowrate\ on\ FI\text{-}109\text{-}36)} = \_\_\_\_\_\ (Purge\ time\ in\ minutes)$$

_____

8) After the line is purged:

a) CLOSE valves PAS-6 and PAS-5 to isolate sample cylinder A. _____

b) Record sample isolation time.

Time:_____ _____

c) CLOSE SW-2, SW-1 and SW-4. _____

d) CLOSE valves PAS-2 or PAS-3. _____

e) CLOSE PAS-8. _____

9) Fill bath tank with cooling water via bath water funnel (takes approximately 6 liters):

a) Place cylinder under PAS-112 and,

b) OPERATE PAS-110 to obtain demin water.

c) Add ~6 liters of water to the water bath funnel. _____

10) Proceed to section F.3 ("Gas Strip the Liquid Sample").

b. High Pressure Feedwater Sampling

CAUTION

Sampling of the high pressure feedwater via the pass panel will probably cause solids to make flow indicator FI-109-36 inoperable. Permission of Chemistry supervision is required to proceed with feedwater sampling.

1) OPEN SW-4 (purge valves). _____

2) OPEN valves PAS-1, PAS-5, PAS-6 and PAS-8. _____

CAUTION

Keep pressure high to avoid flashing the sample. Monitor area dose rates.

3) THROTTLE valve PAS-7 on panel to initiate flow, monitor pressure on PI-1 and flow on FI-109-36. Sample lines are now purging. _____

a) Record FI-109-36 flow:

_____gph _____

CAUTION

Retreat to low dose area during purge.

4) Perform the following calculation to determine purge time.

$$\frac{60 \text{ min}}{hr} \times \frac{12 \text{ gallons}}{\text{gal/hr(Flowrate on FI - 109 - 36)}} = \_\_\_\_\_ \text{ (Purge time in minutes)}$$

_____

5) After the line is purged:

a) CLOSE valves PAS-6 and PAS-5 to isolate sample Cylinder A. _____

b) Record sample isolation time.

Time:_____ _____

c) CLOSE SW-4. _____

d) CLOSE valves PAS-1 and PAS-8. _____

6) Fill bath tank with approximately 6 liters of demin cooling water via the bath water funnel:

a) Place graduated cylinder under PAS-112 and,

b) OPERATE PAS-110 to obtain demin water.

c) Add ~6 liters of water to the water bath funnel. _____

3. Gas Strip the Liquid Sample

NOTE

Gas stripping may be omitted if gas stripping or sampling is not required. If Step 3. is omitted, proceed to Step 4. to fill liquid grab sample assembly.

a. OPEN Valves PAS-10 and PAS-11 and observe pressure change on PI-2. _____

NOTE

If pressure is >14.7 psi or if a high concentration of noble gases are assumed present, perform Step a.1) to use cylinders B and C; if pressure is <14.7 psi perform Step a.2) to use cylinder B. If cylinders used are a change from initial instructions from supervision, be sure to change VYOPF 3533.01 data to reflect the change.

1) If high concentration of noble gas is assumed present, or if PI-2 shows a positive pressure (>14.7 psi), then:

a) OPEN valve PAS-16. _____

CAUTION

The following step requires Argon gas to be purged very slowly through the liquid sample.

b) While observing PI-2, operate valve PAS-26 to bring PI-2 to approximately 64 psi.

_____

c) CLOSE PAS-16. _____

NOTE

This action will ensure good mixing of the internal volumes and will return the system to approximately one atmosphere (14.7 psia).

d) Open PAS-12 to re-expand Cylinder A and B into Cylinder C. _____

e) If the system is not at 14.7 psia, then OPEN PAS-16. _____

f) OPERATE PAS-26 and add argon until 14.7 psia is achieved. _____

g) CLOSE valves PAS-26 and PAS-16 and proceed to Step F.3.a.3) below. _____

2) If noble gas concentration is not significant or PI-2 remains in vacuum (<14.7 psi), then:

a) OPEN PAS-16. _____

b) OPERATE PAS-26 to very slowly purge argon gas through the sample and bring PI-2 up to one atmosphere (14.7 psia). _____

c) CLOSE PAS-16. _____

3) Perform the following:

a) OPEN valve PAS-14 and PAS-39 and extract 1 ml gas samples with a 1½" syringe at the gas septum. _____

b) Inject each 1 ml sample into three separate pre-labeled 14 ml vials (e.g., #1, 2, 3) and place vials in shielded container. _____

4) CLOSE valves PAS-14, PAS-39, PAS-15, PAS-11 and PAS-10. _____

5) If sample was gas stripped (Step 3.a.1)), CLOSE PAS-12. _____

6) Return to Chemistry Lab with gas sample or continue with sampling. _____

7) Enter sample data on VYOPF 3533.02 for accountability of samples. _____

4. Fill liquid grab sample assembly.

a. OPEN/CHECK OPEN PAS-11, PAS-10 and PAS-15. _____

b. OPEN PAS-16. _____

c. OPERATE PAS-26 to achieve 64 psi on pressure gauge PI-2. _____

d. CLOSE PAS-16. _____

e. OPEN PAS-21. _____

f. POSITION PAS-18 with the arrow to the RIGHT for 30 seconds, then POSITION PAS-18 with the arrow to the LEFT. _____

g. CLOSE PAS-21. _____

h. OPEN PAS-19 and PAS-16. Note slight pressure drop on PI-2. _____

i. Allow one minute before proceeding for the grab sample assembly to fill. _____

j. POSITION PAS-17 and PAS-18 to their mid positions (ARROW DOWN). _____

k. POSITION the grab sample assembly valves PAS-17 and PAS-18 to the RIGHT. _____

l. OPEN SW-4. _____

m. OPEN PAS-8. _____

n. OPEN PAS-6, PAS-7 and PAS-12 to vent the pressure in Cylinders A, B, and C to the Torus. _____

o. When the pressure has equalized as indicated on PI-2, CLOSE PAS-6, PAS-7, PAS-8, PAS-10, PAS-11, PAS-12, PAS-16, PAS-19, and PAS-15. _____

p. CLOSE SW-4. _____

q. Request the OSC to OPEN Breaker 11. _____

5. Dilute sample and remove for analysis.

CAUTION

The following drain-down step may take approximately 5 minutes to occur. During this evolution, retreat to a low dose area to reduce exposure.

a. OPEN valves PAS-21 and PAS-24. Allow the dilution water funnel to drain for 1 minute after water is no longer visible in the funnel. _____

b. CLOSE valve PAS-24. _____

NOTE

This action will blow argon gas into the line and push all the water into Cylinder D. Read Steps 5.c through 5.f BEFORE PROCEEDING.

c. CRACK OPEN valve PAS-25 approximately 1/4 turn.

d. Allow the argon gas to bubble slowly through Cylinder D for approximately 30 seconds.

e. SLOWLY CLOSE valve PAS-21 and pressurize Cylinder D with argon to approximately 5 psig on PI-3.

AND IMMEDIATELY

f. CLOSE valve PAS-25. _____

g. OPEN valves PAS-8, PAS-22 and PAS-20. _____

CAUTION

- **In the following step PAS-23 should be opened only long enough to verify sample flow and ensure that sample is at the sample valves. If the inside edge of tygon tubing is not visible, then it has water in it. Do not allow sample to run out.**
- **This action will allow the diluted sample to flow from Cylinder D through the liquid septum.**
- **Be aware of area dose rate changes.**

h. OPEN valve PAS-23 and observe sample flow at liquid septum/sightglass. Use flashlight if needed.

i. As soon as flow has been observed, CLOSE PAS-23. _____

j. OPEN valve PAS-21 to release any remaining argon overpressure on PI-3. _____

CAUTION

When using liquid sample valves, tongs should be used to hold sample container.

k. To obtain a sample:

1) OPERATE sample valve PAS-40 to extract a liquid sample with a syringe (<5 ml) or,

2) OPERATE valve PAS-35 for larger volumes. _____

l. Place appropriate samples in lead shielding and transport to the Chemistry Lab for analysis.

1) Enter sample information on VYOPF 3533.02 to ensure accountability. _____

APPENDIX C

FLUSHING AND RESTORING THE PASS FOLLOWING USE

NOTES

- Although this procedure is Continuous Use, each Appendix may be used individually and the entire procedure Does Not need to be in hand.
- This Appendix assumes the PASS Panel is configured as-left at the completion of Appendix B.

CAUTION

Breaker 11 on AC-DP-5 affects primary containment isolation (PCIV) valves PAS-102/104 (PASS SW-1) and valves PAS-101/103 (PASS SW-2). Failure to maintain positive control of the breaker while primary containment integrity is required by Technical Specifications (plant other than in cold shutdown) could violate LCO 3.7.A.2.

A. Request the OSC to:

1. CLOSE Breaker 11 on AC-DP-5 located in the Switchgear Room. _____
2. POST an Operator at Breaker 11 while the breaker is energized. _____

B. CLOSE or check closed valves PAS-21, PAS-22, and PAS-35 or PAS-40. _____

C. To repressurize and drain Cylinder D, perform the following:

1. OPEN SW-4. _____
2. OPERATE valve PAS-25 until PI-3 reads approximately 25 psig. _____
3. OPEN valves PAS-23 and PAS-22. _____

NOTE

Use a flashlight to facilitate sightglass view of water flow.

4. When flow has ceased through the sightglass, then CLOSE valves PAS-23 and PAS-22. _____

5. Repeat Steps 2 through 4 until no more liquid remains in Cylinder D. _____

D. OPERATE PAS-110 to obtain 900 ml of water from PAS-112. _____

E. Fill the dilution water funnel with 900 ml of water. _____

F. OPEN valves PAS-21 and PAS-24. _____

G. Allow the flush water in the funnel to gravity drain into Cylinder D for 1 minute after it is no longer visible in the funnel. _____

H. CLOSE valves PAS-24 and PAS-21. _____

I. CRACK OPEN valve PAS-25 to allow Cylinder D to pressurize to 25 psig on PI-3. _____

J. CLOSE valve PAS-25. _____

K. OPEN valve PAS-23 and PAS-22 to allow Cylinder D to drain. _____

L. CLOSE valves PAS-22 and PAS-23. _____

M. Repeat Steps I through L a minimum of 3 times to ensure that no liquid remains in Cylinder D. _____

N. CYCLE PAS-21 open and closed to bleed off any residual pressure indicated on PI-3. _____

O. POSITION grab sample valves PAS-17 and PAS-18 so that the arrow points to the LEFT. _____

CAUTION

Ensure that the inboard sample valve SW-1 remains closed for the following operation (steps P-U).

P. OPEN SW-2 and SW-3 (outboard sample and flush valves). _____

Q. CLOSE valves PAS-112 and PAS-20. _____

R. OPEN valves PAS-110, PAS-111. _____

S. OPEN PAS-2 (JP-1) or PAS-3 (JP-11). _____

T. OPEN PAS-5, PAS-6. _____

U. THROTTLE PAS-7 while MONITORING FI-109-36 (do not exceed 25 gph). _____

V. After 5 minutes, CLOSE valves PAS-2 or PAS-3. _____

W. CLOSE PAS-111. _____

X. CLOSE SW-3 and SW-2. _____

CAUTION

For steps Y and FF below, throttle PAS-7 so as not to exceed 25 gph on FI-109-36.

Y. CLOSE PAS-7. _____

Z. OPEN valves PAS-4, PAS-16 and PAS-19. _____

AA. THROTTLE PAS-20 to achieve 15 gph on FI-109-36. _____

BB. THROTTLE PAS-7 to achieve 25 gph on FI-109-36. _____

CC. After 1 minute, CLOSE valve PAS-16. _____

DD. FULLY OPEN PAS-20. _____

EE. THROTTLE PAS-7 as needed to maintain 25 gph on FI-109-36. _____

FF. After 5 minutes, CLOSE valves PAS-4, PAS-5, PAS-6 and PAS-7. _____

GG. OPEN PAS-26 to blow water out of the grab sample assembly. _____

HH. After approximately 30 seconds, CLOSE valves PAS-26, PAS-19, PAS-20 and PAS-8. _____

II. CLOSE SW-4. _____

JJ. OPEN valves PAS-11, PAS-12, PAS-13, PAS-14 and PAS-15. _____

KK. Turn SW-5 ON to start vacuum pump to evacuate Cylinders B and C. _____

LL. Remove gas septum port, OPEN valve PAS-39 and allow air to enter the evacuated systems for 1 minute as vacuum pump is running. _____

MM. Turn SW-5 OFF to stop vacuum pump. _____

NN. CLOSE valve PAS-39 and reinstall gas septum cover. _____

OO. CLOSE valves PAS-11, PAS-12, PAS-13, PAS-14 and PAS-15. _____

PP. OPEN valve PAS-27 to allow bath water to gravity drain. _____

QQ. CLOSE PAS-110. _____

RR. OPEN PAS-112. _____

NOTE

The Reactor Coolant Sampling Panel is now lined up to repeat sampling procedure as necessary.

WARNING

ENSURE THAT RADIATION LEVELS ALLOW FOR PERSONNEL ACCESS BEHIND THE PASS PANEL AND LIQUID RADIATION LEVELS ALLOW FOR PERFORMING THE NEXT STEP. MONITOR DOSE RATES DURING MOISTURE SEPARATOR DRAINING.

SS. OPEN valve PAS-38 and drain water from the vacuum pump moisture separator into a suitable container. _____

TT. CLOSE PAS-38. _____

UU. Request the OSC to OPEN Breaker 11 on AC-DP-5. _____

VV. CLOSE argon tank valve. _____

APPENDIX D

PASS SAMPLE ANALYSIS

NOTES

- Although this procedure is Continuous Use, each Appendix may be used individually and the entire procedure Does Not need to be in hand.
- Utilize VYOPF 3533.02 to track samples and any aliquots made for analysis.

CAUTION

Make efficient use of shielding when performing analyses. Be aware of high dose rates.

A. Gas samples

NOTE

Perform hydrogen and oxygen analysis on the gas chromatograph according to DP 0647.

1. Adjust vial pressure to zero by injecting approximately 13 ml of the appropriate GC carrier gas into each vial collected. _____

2. Hydrogen and oxygen analyses will be performed as requested by following the gas chromatograph procedure in DP 0647. _____

   a. Complete VYOPF 3533.01, Section I.B and I.C. _____

3. Isotopic analysis

   a. Obtain 1 ml of sample from a gas sample vial from A.1. above and inject into an evacuated 14 ml vial. _____

   b. Analyze gas vial as a general sample using DP 2631 or steps outlined in Section C (High Activity) using sample volume from VYOPF 3533.01, Step I.D. Up to 20% dead time is allowed. _____

B. Liquid samples

1. Chloride analysis

a. Analyze sample for chloride content per OP 0634. _____

b. Complete VYOPF 3533.01, Section II.B. _____

2. Boron analysis

a. Analyze sample for Boron using the Lab ICP using the "50B" method file per OP 2630 or by titration per DP 0630. _____

b. Complete VYOPF 3533.01, Section II.C. _____

3. Isotopic analysis

a. Using a syringe (shielded if high dose rates exist), obtain 1 ml of sample (more may be used if dose rates allow) and inject into a known geometry container. Fill container with DI water. Record aliquot volume on VYOPF 3533.01, Section II. _____

b. Analyze liquid sample as a general sample per DP 2631 or steps outlined in Section C to obtain activity in µCi/ml using corrected sample volume from VYOPF 3533.01, Step II.D. Up to 20% dead time is allowed. _____

c. Complete VYOPF 3533.01, Section II.D. _____

C. Counting Techniques for Highly Radioactive Samples

NOTE

If sample size or dilutions can be used to permit a sample to be counted by conventional techniques, this should be done. If this is not possible, the following techniques can be used.

1. 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% germanium detector. _____

b. Using rod and holder, suspend the sample above the detector at a distance that will give a dead time of <20% (must be >1 ft.). _____

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

d. Count the sample using a 2" filter paper geometry efficiency. _____

NOTE

Step e. or f. below may be used to calculate elevated sample activity.

e. Analyze the sample using the MCA selection for "PASS Elevated Samples" _____
OR

f. Calculate the sample activity as follows:

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

NOTE

The below correction factor must be re-evaluated if the detector geometry for the filter paper with a 2" shelf is modified at the time the efficiency calibration (DP 2631) is performed.

where: X = µCi/ml from isotopic printout
d = distance in ft. measured in B.1.c above
17 = correction factor µCi/ml

_____

Verified by:_____

2. Use of portable instruments.

NOTE

If neither conventional methods or those in Step C.1 can be used, a portable gamma survey meter can be used to determine sample activities.

a. 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.

b. Measure the radiation level of the sample at 1 meter. _____

c. Calculate the sample activity as follows:

$$\mu Ci/ml = \frac{(R/hr \text{ at } 1 \text{ meter})(10^6)}{(T)\ (V)}$$

_____

Verified by:_____

where: 10^6 = μCi/Ci
V = sample volume (milliliters)
T = R/hr @ 1 meter/Ci

Values for T (R/hr @ 1 meter/Ci)

Time	Degassed Liquid*	Containment Air**
1 hr	0.60	0.41
4 hr	0.43	0.28
8 hr	0.35	0.22
12 hr	0.31	0.18
24 hr	0.26	0.14

* Assumed mix of 0% of core noble gas inventory, 50% of core halogen inventory and 1% of core solids inventory. For convenience, the mix ratio is expressed as 00/50/1 (% NOBLE GAS/% HALOGENS/% SOLIDS)

** Assumed mix of 100/50/1.

TABLE 1

VY - RADIOACTIVITY CONCENTRATION (μCi/g) IN REACTOR COOLANT BASED ON DESIGN BASIS SOURCE TERM (100/50/1)

Nuclide	1 Hour	8 Hours	24 Hours
Kr-85m	6.5E+04	2.2E+04	1.8E+03
Kr-85	2.5E+03	2.5E+03	2.5E+03
Kr-87	8.5E+04	1.9E+03	3.1E-01
Kr-88	1.6E+05	2.9E+04	5.8E+02
Xe-133	5.3E+05	5.3E+05	5.1E+05
Xe-135m	7.5E+04	3.5E+04	6.6E+03
Xe-135	1.9E+05	2.4E+05	1.3E+05
I-131	1.3E+05	1.3E+05	1.2E+05
I-132	1.9E+05	1.8E+05	1.6E+05
I-133	2.7E+05	2.1E+05	1.3E+05
I-134	2.1E+05	1.8E+03	6.9E-03
I-135	2.3E+05	1.1E+05	2.1E+04
Sr-90	1.9E+02	1.9E+02	1.9E+02
Sr-91	3.2E+03	1.9E+03	5.9E+02
Sr-92	2.8E+03	4.7E+02	7.9E+00
Y-91	3.5E+03	3.5E+03	3.5E+03
Y-93	4.0E+03	2.5E+03	8.2E+02
Zr-95	4.6E+03	4.5E+03	4.5E+03
Nb-97	4.5E+03	3.5E+03	1.7E+03
Ru-103	3.9E+03	3.8E+03	3.8E+03
Cs-134	2.6E+02	2.6E+02	2.6E+02
Cs-136	9.3E+01	9.1E+01	8.8E+01
Cs-137	2.6E+02	2.6E+02	2.6E+02
Ba-140	4.7E+03	4.7E+03	4.5E+03
La-140	4.9E+03	4.9E+03	4.8E+03
Ce-141	4.5E+03	4.5E+03	4.4E+03
Ce-143	4.1E+03	3.6E+03	2.6E+03
Eu-156	2.4E+02	2.4E+02	2.3E+02

TABLE 1 (Continued)

Nuclide	1 Hour	8 Hours	24 Hours
Np-238	4.1E+02	3.7E+02	3.0E+02
Np-239	5.1E+04	4.7E+04	3.9E+04
TOTAL (above)	2.2E+06	1.6E+06	1.1E+06
TOTAL (including others)	2.4E+06	1.6E+06	1.2E+06

Assumptions and References:

1. Design Basis Source Term 100% NG, 50% Iodines and 1% Solids.
2. ORIGEN2 Calculation (VY Core Damage Assessment Methodology).
3. NSSS isolated liquid mass = 1.615E+08 g (VY Core Damage Assessment Methodology).

TABLE 2

VY - 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 3

VY - DOSE RATES (R/hr) AT DIFFERENT SAMPLING STATIONS AT DIFFERENT TIMES AFTER SHUTDOWN[c]

Time (hr)	Post-Accident Sampling Station	Containment Air Sampling Station	Vent Stack Sampling Room
1	4.5E-1[a]	6.0E+0[a]	1.0E+0[b]
3	1.9E-1	2.6E+0	5.1E-1
8	5.4E-02	1.1E+0	2.2E-1
24	6.8E-03	4.7E-1	5.8E-02
72	4.1E-03	3.1E-1	1.8E-02

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 4

VY - REACTOR COOLANT AND CONTAINMENT AIR SAMPLES
DOSE RATES (R/hr) AT DIFFERENT TIMES AFTER SHUTDOWN[a]

Time (hr)	$1cm^3$ Undiluted Degassed Reactor Coolant	$1cm^3$ Dissolved Gas From 1cm Pressurized Reactor Coolant	$1cm^3$ Undiluted Containment Air Sample
1	2.0E+0[b]	8.9E-1[b]	1.6E-02[b]
3	1.2E+0	3.9E-1	7.0E-03
8	6.4E-1	1.6E-1	2.9E-03
24	3.2E-1	6.9E-02	1.3E-03
72	1.5E-1	4.6E-02	8.3E-04

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.

[b] Per VYC-70, no shielding, no dilution.

10 CFR 50.54(q) Evaluation Checklist

List of Emergency Plan Section(s)/Emergency Plan Implementing Procedure(s) or any other document to be evaluated. (Include Title and Revision No.):

DP 3533, Rev 6, Post Accident Sampling of Rx Coolant

A. Screening Evaluation

Based on a review of the following questions, determine if the change has the potential to affect our ability to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR 50.

A "YES" answer to any part of the questions requires that a written evaluation be done to determine whether the effectiveness of the Emergency Plan was decreased as specified in Section B of this checklist.

A "NO" answer to all questions requires no written evaluation as specified in Section B of this checklist.

1. Could the proposed change affect our ability to meet the following standards of 10 CFR 50.47(b):

(1) Assignment of Emergency Response Organization responsibilities — YES (NO)

(2) Assignment of on-shift Emergency Response Organization personnel — YES (NO)

(3) Arrangements for Emergency Response Support and Resources — YES (NO)

(4) Emergency Classification and Action levels, including facility system and effluent parameters — YES (NO)

(5) Notification Methods and Procedures — YES (NO)

(6) Emergency Communications among principal response organizations and the public — YES (NO)

(7) Public Education and Information — YES (NO)

(8) Adequacy of Emergency Facilities and Equipment — YES (NO)

(9) Adequacy of Accident Assessment methods, systems and equipment — (YES) NO

(10) Plume exposure pathway EPZ protective actions — YES (NO)

(11) Emergency Worker Radiological Exposure Control — YES (NO)

(12) Medical Services for contaminated injured individuals — YES (NO)

(13) Recovery and Reentry Plans — YES (NO)

(14) Emergency response periodic drills and exercises — YES (NO)

(15) Radiological Emergency Response Training — YES (NO)

(16) Plan development, review and distribution — YES (NO)

2. Could the change affect our ability to meet the following requirements of Appendix E to 10 CFR 50.

(1) Section IV. A - Organization	YES (NO)
(2) Section IV. B - Assessment Actions	(YES) NO
(3) Section IV. C - Activation of Emergency Organizations	YES (NO)
(4) Section IV. D - Notification Procedures	YES (NO)
(5) Section IV. E - Emergency Facilities and Equipment	YES (NO)
(6) Section IV. F - Training	YES (NO)
(7) Section IV. G - Maintaining Emergency Preparedness	YES (NO)
(8) Section IV. H - Recovery	YES (NO)

B. Effectiveness Determination

For each applicable (i.e., a "yes" answer specified) standard to 10 CFR 50.47(b) and Appendix E to 10 CFR 50 identified from Section A above, complete the evaluation form below to determine whether the change decreases the effectiveness of the Emergency Plan and whether it continues to meet the stated applicable standard or requirement.

A facsimile of the evaluation form may be used as needed and attached to this checklist.

For applicable item 10 CFR 50.47(b)(9) & App E Section IV.B of Section A above, this change (DOES/DOES NOT) decrease the effectiveness of the Emergency Plan and (DOES/DOES NOT) continue to meet the stated applicable standard or requirement.

BASIS FOR ANSWER: Changes made were to correct the procedure steps to reflect how the sampling is correctly done. (Formality) These recommendations were identified through hands on training during Chem training cycle. These changes do not decrease the effectiveness of the procedure but enhance & correct it.

10 CFR 50.54(q) Evaluation Checklist (Continued)

C. Conclusion (Fill out appropriate information)

☑ The changes made do not decrease the effectiveness of the Emergency Plan and continue to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR 50.

☐ The changes made do decrease the effectiveness of the Emergency Plan and decrease our ability to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR 50. The following course of action is recommended:

- ☐ Revise proposed changes to meet applicable standards and requirements.
- ☐ Cancel the proposed changes.
- ☐ Process proposed changes for NRC approval prior to implementation in accordance with 10 CFR 50.54(q).

D. Impact on Other Documents (TRM, Tech Specs)

Keywords used in search: _____

☑ This change does not affect any other documents.

☐ This change does affect other documents.

Document(s) affected: _____

Section(s) affected: _____

E. Impact on the Updated FSAR

Use AP 6036 to determine if the proposed E-Plan change modifies existing UFSAR information or requires the addition of new UFSAR information and initiate UFSAR change(s) as required.

Keywords used in UFSAR search: _____

Additional Comments:

These changes reflect actual sampling practices and do not change intent of procedure nor decrease effectiveness.

Prepared By: Audra Williams Audra Williams Date: 5.23.02
(Print/Sign)

Reviewed By: Lori N. Tkaczyk Lori N. Tkaczyk Date: 6/9/02
(Emergency Plan Coordinator) (Print/Sign)