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CHEMISTRY SAMPLING PROCEDURE

CH-630A

EMERGENCY PLAN IMPLEMENTING PROCEDURE

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

POST ACCIDENT SAMPLING AND ANALYSIS OF REACTOR BUILDING VENT

APPROVED BY: Procedure Owner


(SIGNATURE ON FILE)

DATE: 8/28/00

Procedure Owner: Nuclear Chemistry

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
<u>1.0</u> <u>PURPOSE</u>	1
<u>2.0</u> <u>REFERENCES</u>	1
2.1 <u>DEVELOPMENTAL REFERENCES</u>	1
2.2 <u>CMIS REFERENCES</u>	2
<u>3.0</u> <u>PERSONNEL INDOCTRINATION</u>	2
3.1 <u>DESCRIPTION</u>	2
3.2 <u>LIMITS & PRECAUTIONS</u>	2
<u>4.0</u> <u>INSTRUCTIONS</u>	4
4.1 <u>SAMPLE TEAM CHECKLIST</u>	4
4.2 <u>GAMMA ISOTOPIC ANALYSIS</u>	6
4.3 <u>FILTER GRAB SAMPLE</u>	10
4.4 <u>WSSB-2 GAS GRAB SAMPLE</u>	14
<u>5.0</u> <u>CONTINGENCIES</u>	24
5.1 <u>NOTIFICATIONS AND SHIPMENTS</u>	24

ENCLOSURES

1	Technical Support Center Data Sheet	25
2	RM-A1-AC Operation	26

1.0 PURPOSE

- 1.1 This procedure provides instructions for sampling and analyzing gaseous effluent releases from the Reactor Building during accident conditions.

2.0 REFERENCES

2.1 DEVELOPMENTAL REFERENCES

- | 2.1.1 Radiological Emergency Response Plan
- | 2.1.2 NUREG 0737, Post-TMI Requirements
- | 2.1.3 Regulatory Guide 1.97, Instrumentation For Light-Water Cooled Nuclear Power Plants To Assess Plant And Environs Conditions During And Following An Accident
- | 2.1.4 RSP-600, ALARA Program
- | 2.1.5 Applied Physical Technology, Volumes A through C (Crystal River Installation PASS manuals)
- | 2.1.6 Drawing M.D. 0211033.003
- | 2.1.7 FD-302-693, Containment Monitoring System
- | 2.1.8 FD-302-694, PASS Containment Monitoring AIM Detection System
- | 2.1.9 FD-302-695, Noble Gas Effluent Monitoring System
- | 2.1.10 FD-302-766, Auxiliary Building Post Accident Sampling

2.2 CMIS REFERENCES

WSV-33, WSV-35, WSV-36, WSV-37, WSV-59, WSV-60, WSV-61, WSV-63, WSV-70, WSV-71, WSV-72, RMV-1, RMV-2, RMV-3, RMV-4, RMV-5, RMV-6, RMV-8, RMV-9, RMV-11, RMV-13, RMV-14, RMV-25, RMV-27, WSP-1, WS-14-FI, RM-A1, AHF-67, MEEL-2, RM-A1-MG-2A, RMP-A1

WSSB-2, RANGE gas grab sampler, 143' AB
RMSB-1A/RMSB-1B, RM-A1 RANGE filter grab sampler, 143' AB
RM-A1-RC, RM-A1 LMH Valve Controller, Control Room
RM-A1-FI, RB Vent Mid/High range flow, Count Room
RM-A1-RE4, RM-A1 Mid Range detector, 143' AB
RM-A1-RE5, RM-A1 High Range detector, 143' AB
WS-13-CE, AIMS monitor, 143' AB
RM-A1-RI4, RM-A1 Mid Range rate meter, Control Room
RM-A1-RI5, RM-A1 High Range rate meter, Control Room
RM-A1-RY4, RM-A1 gas low range rate meter, Control Room
CMP, RANGE Mimic Panel, Count Room

3.0 PERSONNEL INDOCTRINATION

3.1 DESCRIPTION

NOTE: The PASS is powered by the B ES Bus through ACDP-59.

The Post Accident Sampling system is an on-line system designed to sample and evaluate various liquid and gaseous sample streams during accident conditions. The Reactor Building Atmosphere and Noble Gas Effluent Monitoring Subsystem (RANGE) samples the RB atmosphere and gaseous effluents from both the RB and AB Vents.

The Post Accident Sampling system provides a means of performing an in-line gamma isotopic analysis, gas grab sample, filter grab sample, and gaseous activity monitoring. Gaseous activity is monitored with RM-A1-MG-2A (low range), RM-A1-RE4 (mid range), and RM-A1-RE5 (high range) in-line detectors. RM-A1-RC, when selected to AUTO, (RB LMH valve controller) automatically aligns the gaseous monitors based on sample activity. RM-A1-RC may be operated manually.

3.2 LIMITS & PRECAUTIONS

3.2.1 Performance of all or part of this procedure will be done by direction of the Emergency Coordinator.

3.2.2 Entries into the controlled access area must have Radiation Monitoring Team preplanning, concurrence, and coverage as outlined in EM-104, Operation of the Operational Support Center.

- 3.2.3 During post-accident sampling, extremely high radiation exposure levels could be experienced. The ability to perform this procedure and stay within exposure limits will require ALARA pre-planning.
- 3.2.4 Return to the Lab if the dose rate at places requiring work is > 15R/Hr. The 4 REM Total Effective Dose Equivalent (TEDE) whole body exposure limit will be exceeded in 16 minutes at 15R/Hr.
- 3.2.5 All sampling actions are performed at the Main Control Board by Operations or in the Count Room either on the VAX Computer or from CMP (RANGE Mimic Panel) unless otherwise noted.
- 3.2.6 Section 4.1 must be completed prior to any sample team re-entries.
- 3.2.7 AB re-entry is terminated if required tools are not in Post Accident Sample Kit, 143' AB.
- 3.2.8 WS-13-CE (RANGE AIMS) can measure 1.0E-6 $\mu\text{Ci/cc}$ to 1.0E+5 $\mu\text{Ci/cc}$ for the Reactor Building Vent sample point.
- 3.2.9 Do not exceed 3 Ci total activity on particulate or iodine filters.
- 3.2.10 WSP-1 may be damaged if operated without complete line-up. WSP-1 is a positive displacement pump.
- 3.2.11 WSV-70 is interlocked with the following valves and will not open if any of these valves are open.
- o WSV-33
 - o WSV-35
 - o WSV-36
 - o WSV-37
- 3.2.12 RMV-25 does not have a separate operator. It is interlocked with RMV-8. When RMV-8 is closed, RMV-25 will open. When RMV-8 is opened, RMV-25 will close.
- 3.2.13 RM-A1-FI reading is multiplied by 0.1 to obtain flow in cfm.
- 3.2.14 RMV-6 is a 3-way valve. OPEN indicates RMV-6 is aligned from RM-A1-RE4 outlet to RB Exhaust Duct. CLOSED indicates RMV-6 is aligned from RM-A1-RE4 outlet to RMP-A1 inlet.

4.1 SAMPLE TEAM CHECKLIST (Cont'd)

ACTIONS	DETAILS
4.1.3 DISCUSS access and exit routes, communication techniques and radiological conditions	<ul style="list-style-type: none"> <input type="checkbox"/> DISCUSS access route <input type="checkbox"/> DISCUSS exit route <input type="checkbox"/> DISCUSS communication techniques <li style="padding-left: 40px;">TSC phone number _____ <input type="checkbox"/> PERFORM radio check on channel _____ once outside TSC <u>IF</u> obtaining RMSB-1B filter grab sample, <u>THEN</u> DETERMINE the following: <input type="checkbox"/> Sample stream expected activity activity _____ $\mu\text{Ci/cc}$ <input type="checkbox"/> Designated location to transport filter grab sample Location _____ <u>IF</u> obtaining WSSB-2 gas grab sample, <u>THEN</u> ENSURE the following: <input type="checkbox"/> MEEL-2, AB Elevator, is operable to transport WSSB-2 <input type="checkbox"/> Allen wrench, or equivalent, as determined by Chemistry supervision, for removing T-Handle from grab sampler and attaching to new grab sampler <input type="checkbox"/> Knife available, or equivalent, as determined by Chemistry supervision, to cut transit cover strap from lifting eye <input type="checkbox"/> Tie-wrap, or equivalent as determined by Chemistry supervision to attach transit cover to new grab sampler lifting eye
	_____ Initial/Date

4.2 GAMMA ISOTOPIC ANALYSIS

ACTIONS	DETAILS
4.2.1 ALIGN RM-A1-RC, RB Manifold Detector Valve Controller. RM-A1-RC is located in Control Room	___ ENSURE RM-A1-RC selected to AUTO <u>OR</u> ___ ENSURE RM-A1-RC aligned for manual operation per section 4.5, RM-A1-RC Manual Operation
	_____/_____ Initial/Date

CAUTION: WSP-1 may be damaged if operated without complete line-up.

4.2.2 PURGE sample line	1. OPEN the following valves: ___ RMV-11 ___ WSV-61 ___ WSV-70 2. ___ START WSP-1 3. ___ VERIFY flow at WS-14-FI 4. ___ <u>IF</u> NO flow indication at WS-14-FI, <u>THEN</u> STOP WSP-1 <u>AND</u> NOTIFY OSC Chemistry Coordinator 5. ___ PURGE at least 1 minute
	_____/_____ Initial/Date

4.2 GAMMA ISOTOPIC ANALYSIS (Cont'd)

ACTIONS	DETAILS
4.2.3 PERFORM pre-analysis checks on WS-13-CE, RANGE AIMS detector	1. ___ VERIFY > 50 pounds liquid nitrogen at RANGE liquid nitrogen monitor ***** CAUTION: Do not reset liquid nitrogen monitor unless high voltage bias is adjusted to 0 volts. ***** 2. ___ ENSURE RANGE detector voltage adjusted per PASS and RANGE AIMS Equipment Logbook 3. ___ ENSURE weekly calibration check performed within past 7 days per CH-234 as indicated on weekly Count Room QC logsheet in Count Room Task logbook <div style="text-align: right;"><u> </u>/ Initial/Date</div>

4.2 GAMMA ISOTOPIC ANALYSIS (Cont'd)

ACTIONS	DETAILS
4.2.4 PERFORM Gamma Isotopic Analysis	<ol style="list-style-type: none">1. ___ LOG ON VAX computer as Username: PASS2. ___ SELECT PASS MENU.3. ___ SELECT GASEOUS SAMPLING4. ___ SELECT RB VENT Sample Point5. ___ UPDATE sample parameters6. ___ SELECT ACCEPT.7. ___ SELECT QUIT key to exit8. ___ ENTER LO to log off VAX computer9. ___ ATTACH gamma scan to this procedure10. ___ NOTIFY OSC Chemistry Coordinator or designee of results
	Gamma Scan ID number(s):
	_____ Initial/ Date / Time
	_____ Initial/ Date / Time
	_____ Initial/ Date / Time
	<ol style="list-style-type: none">11. ___ <u>IF</u> additional Gamma Isotopic Analysis are required, <u>THEN</u> REPEAT steps 1 through 10
	_____ Initial/Date

4.2 GAMMA ISOTOPIC ANALYSIS (Cont'd)

ACTIONS		DETAILS	
4.2.5	ALIGN system for instrument air purge	1. ___	OPEN WSV-63
		2. ___	CLOSE RMV-11
		3. ___	PURGE at least 5 minutes
			_____/_____ Initial/Date
4.2.6	PERFORM AIMS purge	1. ___	LOG ON VAX computer as Username: PASS
		2. ___	SELECT PASS MENU
		3. ___	SELECT Flush Sample Lines
		4. ___	SELECT VENT AIR PURGE
		5. ___	<u>WHEN</u> a low stable countrate observed on WS-13-CE, Range Ratemeter <u>THEN</u> SELECT RETURN
		6. ___	DEPRESS PF4 TO QUIT
		7. ___	ENTER LO to log off
			_____/_____ Initial/Date
4.2.7	SECURE instrument air purge	1. ___	STOP WSP-1
		2. ___	CLOSE WSV-63
		3. ___	CLOSE WSV-61
		4. ___	CLOSE WSV-70
			_____/_____ Initial/Date

4.3 FILTER GRAB SAMPLE

	ACTIONS	DETAILS
4.3.1	ALIGN RM-A1-RC, RB Manifold Detector Valve Controller. RM-A1-RC is located in Control Room	<p>___ ENSURE RM-A1-RC selected to AUTO</p> <p><u>OR</u></p> <p>___ ENSURE RM-A1-RC aligned for manual operation per section 4.5, RM-A1-RC Manual Operation</p>
		_____ Initial/Date

- 4.3.2 DETERMINE filter purge time
1. ___ RECORD RM-A1-FI flow at Count Room

$$\text{flow rate (cfm)} = \frac{\text{RM - A1 - FI}}{\text{indicated flow}} \times 0.1$$

Flow Rate _____ cfm

2. ___ REPORT RM-A1-FI flow to OSC Chemistry Coordinator

NOTE: Total activity on filters is limited to < 3 Ci.

3. ___ DETERMINE sample purge time

$$\text{purge time} = \frac{3E6 \mu\text{Ci}}{\left(\frac{\text{RM - A1 - FI}}{\text{Flow}} \text{ (cfm)} \right) \left(\frac{\text{expected activity (Ci)}}{\text{cc}} \right) \left(\frac{2.832E4 \text{cc}}{\text{cf}} \right)}$$

Purge Time _____ minutes

Initial/Date

4.3 FILTER GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
<p>4.3.3 OBTAIN equipment from Post Accident Sampling Kit. Sampling kit is at 143' AB west side of SF pool wall</p>	<p>OBTAIN the following equipment from Sampling kit:</p> <ul style="list-style-type: none"> ___ Filter holder release tool ___ Filter cartridge assembly extractor tool ___ 1 filter cartridge assembly with particulate and iodine filters installed ___ 1 Plastic bag ___ Shielded carrying container
<p>_____/_____ Initial/Date</p>	
<p>4.3.4 INSTALL RMSB-1B filter cartridge assembly. RMSB-1B is located at RM-A1 south end inside cabinet</p>	<ol style="list-style-type: none"> 1. VERIFY valve control handles in vertical position <ul style="list-style-type: none"> ___ RMV-1 ___ RMV-2 2. ___ OPEN RMSB-1B shield door 3. ___ ENSURE filter holder released 4. ___ INSTALL new filter cartridge assembly with particulate filter UP 5. ___ ENGAGE filter holder 6. ___ CLOSE shield door
<p>_____/_____ Initial/Date</p>	
<p>4.3.5 START RMSB-1B sample flow</p>	<ol style="list-style-type: none"> 1. ___ ALIGN RMV-1 control handle to horizontal position. 2. ___ ALIGN RMV-2 control handle to horizontal position 3. ___ RECORD start time to nearest second
<p>Start time</p>	
<p>_____/_____/_____ Date hour min sec</p>	

4.3 FILTER GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.3.5 (Cont'd)	<p>NOTE: The preferred low dose waiting area is outside AB if purge time is long enough.</p> <p>4. ___ <u>IF</u> purge time is adequate, <u>THEN</u> MOVE to low dose waiting area while collecting sample</p> <p style="text-align: right;">_____/_____ Initial/Date</p>
<p>4.3.6 STOP sample collection. RMSB-1B is located at RM-A1 south end inside cabinet</p>	<p>1. ___ ALIGN RMV-1 control handle to vertical position</p> <p>2. ___ RECORD stop time to nearest second</p> <p>Stop time</p> <p style="text-align: center;">_____/_____/_____/_____ Date hour min sec</p> <p>3. ___ ALIGN RMV-2 control handle to the vertical position</p> <p style="text-align: right;">_____/_____ Initial/Date</p>
<p>4.3.7 PURGE RMSB-1B with instrument air. RMV-27 is located at RM-A1 south end inside cabinet.</p>	<p>1. ___ OPEN RMV-27</p> <p>2. ___ PURGE instrument air for 5 minutes</p> <p>3. ___ MOVE to low dose waiting area while purging RMSB-1B</p> <p>4. ___ CLOSE RMV-27</p> <p style="text-align: right;">_____/_____ Initial/Date</p>

4.3 FILTER GRAB SAMPLE (Cont'd)

ACTIONS

DETAILS

 CAUTION: Radiation dose rates may be high with RMSB-1B shield door open.

4.3.8 REMOVE RMSB-1B filter cartridge assembly. RMSB-1B is located at RM-A1 south end inside cabinet

1. ___ CONCURRENTLY OPEN RMSB-1B shield door and OBSERVE dose rates
2. ___ RELEASE filter holder

 CAUTION: Step 3 is performed as quickly as possible because filter cartridge assembly dose rate may be high.

3. ___ REMOVE used filter cartridge assembly as follows:
 - o REMOVE filter cartridge assembly
 - o PLACE in plastic bag
 - o PLACE in shielded container
4. ___ CLOSE shield door

 Initial/Date

4.3.9 STORE sample container

- ___ TRANSPORT shielded sample containers to designated area
- ___ STORE shielded sample container

 Initial/Date

4.4 WSSB-2 GAS GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.4.4 ISOLATE grab sample. WSSB-2 is located 143' AB west of elevator	NOTE: WSV-71 and WSV-72 T-Handle operator is attached to WSSB-2. 1. ___ CLOSE WSV-72 using T-Handle 2. ___ CLOSE WSV-71 using T- Handle _____/_____/_____ Initial/ Date / Time
4.4.5 ALIGN for Instrument Air purge	1. ___ OPEN WSV-63 2. ___ CLOSE RMV-11 _____/_____ Initial/Date
4.4.6 PERFORM pre-analysis AIMS detector checks on WS-13-CE, RANGE AIMS detector	1. ___ VERIFY > 50 pounds of liquid nitrogen at RANGE liquid nitrogen monitor ***** CAUTION: Do not reset liquid nitrogen monitor unless high voltage bias is adjusted to 0 volts. ***** 2. ___ ENSURE RANGE detector high voltage adjusted per PASS and RANGE AIMS Equipment Logbook 3. ___ ENSURE weekly calibration check performed within past 7 days per CH-234 as indicated on weekly Count Room QC logsheet in Count Room Task _____/_____ Initial/Date

4.4 WSSB-2 GAS GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.4.7 PURGE WS-13-CE, RANGE AIMS	1. ___ LOG ON VAX computer as Username: PASS 2. ___ SELECT PASS MENU 3. ___ SELECT Flush Sample Lines 4. ___ SELECT VENT AIR PURGE 5. ___ <u>WHEN</u> a low stable countrate observed on WS-13-CE, Range Ratemeter <u>THEN</u> SELECT RETURN 6. ___ DEPRESS PF4 TO QUIT 7. ___ ENTER LO to log off
	_____/ Initial/Date

4.4.8 RESTORE system line-up	1. ___ OPEN WSV-61 2. ___ CLOSE WSV-59 3. ___ CLOSE WSV-60 4. ___ PURGE at least 1 minute 5. ___ STOP WSP-1 6. ___ CLOSE WSV-63 7. ___ CLOSE WSV-61 8. ___ CLOSE WSV-70
	_____/ Initial/Date

4.4 WSSB-2 GAS GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.4.9 REMOVE WSSB-2. WSSB-2 is located 143' AB west of elevator	<ol style="list-style-type: none"> 1. ___ OBTAIN 3/4" wrench from Primary lab key locker 2. ___ INSTALL grab sampler ramp 3. ___ DISCONNECT grab sampler: <ol style="list-style-type: none"> a. ___ SQUEEZE disengagement lever b. ___ PUSH engagement handle to rearmost position c. ___ PULL UP cart to station lock mechanism to release cart d. ___ REMOVE WSSB-2 from sample station 4. ___ INSTALL transit cover over quick connects 5. ___ TRANSPORT grab sampler to 95' TB crane well 6. ___ UNBOLT grab sampler from cart 7. ___ REMOVE T-Handle operator from grab sampler
	NOTE: Procedure may be continued while step 8 is completed.
	8. ___ GO TO section 5.1, Notifications and Shipment, for off-site shipment.

Initial/Date

4.4 WSSB-2 GAS GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.4.10	<p>INSTALL new WSSB-2 grab sampler at sample station. Sample station is located 143' AB west of elevator</p>
	<ol style="list-style-type: none"> 1. ___ BOLT new grab sampler onto cart 2. ___ REMOVE transit cover 3. ___ ATTACH transit cover to lifting ring on grab sampler 4. ___ ATTACH T-Handle to new grab sampler 5. ___ OPEN WSV-72 with T-Handle 6. ___ OPEN WSV-71 with T-Handle 7. ___ TRANSPORT new grab sampler to sample station

CAUTION: When installing WSSB-2, force may damage quick connects.

NOTE: When positioned correctly, WSSB-2 makes metal to metal contact with curved face of sample station.

NOTE: Several attempts may be necessary align grab sampler.

8. INSTALL grab sampler
 - a. ___ One person GUIDE WSSB-2 into sample station
 - b. ___ Second person PUSH WSSB-2 onto platform
 - c. ___ HALT WSSB-2 several inches from connection point
 - d. ___ SLOWLY PUSH WSSB-2 into sample station
 - e. ___ ENGAGE Cart to Station Locking Mechanism
 - f. ___ PUSH Locking Mechanism handle completely down, DRIVING lock bolt through hole in cart
 - g. ___ GENTLY PULL Engagement Handle. A distinct "click" may be heard.

4.4 WSSB-2 GAS GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.4.10 (Cont'd)	<ul style="list-style-type: none"><li data-bbox="938 373 1455 808">h. ___ ENSURE engagement<ul style="list-style-type: none"><li data-bbox="1057 405 1455 590">1. ___ UNLOCK cart from station by pulling up on Cart to Station Locking Mechanism handle<li data-bbox="1057 594 1455 682">2. ___ MOVE Engagement Handle back and forth<li data-bbox="1057 686 1455 808">3. ___ If properly connected, cart will move back and forth<li data-bbox="938 812 1455 1003">i. ___ RELOCK cart to station pushing locking mechanism handle completely down, driving lock bolt through hole in cart

Initial/Date

4.5 RM-A1-RC MANUAL OPERATION

ACTIONS

DETAILS

NOTE: RM-A1-RC is located in Control Room behind main control board and all valves are operated at RM-A1-RC.

NOTE: Valve position indication is determined by the red indication light. Red light ON indicates OPEN. Red light OFF indicates CLOSED.

4.5.1 ALIGN RM-A1-RC, RB Manifold LMH Valve Controller, for manual operation

- ___ IF RM-A1-RC selected to AUTO, THEN PERFORM the following:
 - ___ DETERMINE phase of automatic operation per Enclosure 2, RM-A1-RC Operation
 - ___ POSITION switch for any open valve to ON
 - ___ SELECT RM-A1-RC AUTO/MAN switch to MAN
 - ___ GO TO step determined per Enclosure 2
- ___ ENSURE AUTO/MAN switch selected to MAN

_____/_____
Initial/Date

4.5.2 ALIGN system for low range operation

1. ENSURE CLOSED the following valves:
 - ___ RMV-3
 - ___ RMV-4
 - ___ RMV-5
 - ___ RMV-6
 - ___ RMV-9
 - ___ RMV-8
2. ___ ENSURE OPEN RMV-25
3. ___ VERIFY flow at RM-A1-FI is 0 cfm at CMP in Count Room
4. ___ MONITOR RM-A1-RY4, RM-A1 gas low range rate meter

_____/_____
Initial/Date

4.5 RM-A1-RC MANUAL OPERATION (Cont'd)

ACTIONS	DETAILS
4.5.3 <u>IF</u> RM-A1-RY4 is approximately 1/2 scale increasing, <u>THEN</u> ALIGN system for low range, mid range, and high range parallel operation	1. <input type="checkbox"/> OPEN RMV-4 2. <input type="checkbox"/> MONITOR RM-A1-RY4, RM-A1 gas Low Range ratemeter AND RM-A1-RI4, RM-A1 Mid Range ratemeter on the RB LMHVC.
_____/_____ Initial/Date	

4.5.4 <u>IF</u> RM-A1-RY4 is approximately 3/4 scale increasing, <u>AND</u> RM-A1-RI4 is approximately 1/3 scale increasing, <u>THEN</u> ISOLATE RM-A1 low range detector	1. <input type="checkbox"/> OPEN RMV-8 2. <input type="checkbox"/> VERIFY CLOSED RMV-25 3. <input type="checkbox"/> MONITOR RM-A1-RI4, RM-A1 Mid Range ratemeter on the RB LMHVC, AND RM-A1-RI5, RM-A1 High Range ratemeter on the RB LMHVC.
_____/_____ Initial/Date	

NOTE: Procedure may continue while completing Step 4.5.5.

4.5.5 <u>IF</u> isolated per Step 4.5.4, <u>THEN</u> PURGE RM-A1 low range with instrument air	1. <input type="checkbox"/> OPEN RMV-9 2. <input type="checkbox"/> PURGE RM-A1-MG-2A with instrument air at least 35 minutes 3. <input type="checkbox"/> <u>WHEN</u> RM-A1-RY4, RM-A1 gas Low Range ratemeter count rate lowers, <u>THEN</u> CLOSE RMV-9
_____/_____ Initial/Date	

4.5.6 <u>IF</u> RM-A1-RI4 is approximately 3/4 scale increasing, <u>AND</u> RM-A1-RI5 is responding to radiation levels in sample, <u>THEN</u> ISOLATE RM-A1 mid range detector	1. <input type="checkbox"/> OPEN RMV-5 2. <input type="checkbox"/> OPEN RMV-6 3. <input type="checkbox"/> CLOSE RMV-4 4. <input type="checkbox"/> MONITOR RM-A1-RI5, High Range ratemeter on the RB LMHVC.
_____/_____ Initial/Date	

4.5 RM-A1-RC MANUAL OPERATION (Cont'd)

ACTIONS

DETAILS

NOTE: Procedure may continue while completing Step 4.5.7.

4.5.7	<u>IF</u> isolated per Step 4.5.6, <u>THEN</u> PURGE mid range detector with instrument air	1. <input type="checkbox"/> OPEN RMV-3 2. <input type="checkbox"/> PURGE RM-A1-RE4 at least 35 minutes 3. <input type="checkbox"/> <u>WHEN</u> RM-A1-RI4, RM-A1 Mid Range rate meter on the RB LMHVC dose rate lowered, <u>THEN</u> CLOSE RMV-3
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Initial/Date

4.5.8	<u>IF</u> mid range detector isolated per 4.5.6, <u>AND</u> RM-A1-RI5 does not respond to radiation level in sample for at least 5 minutes, <u>THEN</u> ALIGN mid range detector for operation	1. <input type="checkbox"/> CLOSE RMV-6 2. <input type="checkbox"/> OPEN RMV-4 3. <input type="checkbox"/> CLOSE RMV-5 4. <input type="checkbox"/> MONITOR RM-A1-RI4, RM-A1 Mid Range rate meter on the RB LMHVC
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Initial/Date

4.5.9	<u>IF</u> mid range detector aligned per Step 4.5.8, <u>AND</u> is 1/3 scale decreasing, <u>THEN</u> ALIGN low range detector for operation	1. <input type="checkbox"/> CLOSE RMV-8 2. <input type="checkbox"/> VERIFY OPEN RMV-25 3. <input type="checkbox"/> CLOSE RMV-4 4. <input type="checkbox"/> MONITOR RM-A1-RY4, RM-A1 Low Range rate meter
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Initial/Date

4.5.10	<u>IF</u> low range detector aligned per step 4.5.9, <u>THEN</u> PURGE RM-A1 mid range with instrument air	1. <input type="checkbox"/> OPEN RMV-6 2. <input type="checkbox"/> OPEN RMV-3 3. <input type="checkbox"/> PURGE RM-A1-RE4 at least 35 minutes 4. <input type="checkbox"/> <u>WHEN</u> RM-A1-RI4, RM-A1 Mid Range rate meter on the RB LMHVC dose rate lowered, <u>THEN</u> CLOSE the following valves: <input type="checkbox"/> RMV-3 <input type="checkbox"/> RMV-6
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Initial/Date
Page 22

4.5 RM-A1-RC MANUAL OPERATION (Cont'd)

ACTIONS	DETAILS
4.5.11 <u>WHEN</u> manual operation complete, <u>THEN</u> RESTORE RM-A1-RC to automatic operation	1. <input type="checkbox"/> ENSURE CLOSED the following valves: <input type="checkbox"/> RMV-3 <input type="checkbox"/> RMV-4 <input type="checkbox"/> RMV-5 <input type="checkbox"/> RMV-6 <input type="checkbox"/> RMV-9 <input type="checkbox"/> RMV-8 2. <input type="checkbox"/> ENSURE OPEN RMV-25 3. <input type="checkbox"/> VERIFY flow at RM-A1-FI is 0 cfm 4. <input type="checkbox"/> SELECT RM-A1-RC AUTO/MAN switch to AUTO

 /
Initial/Date

5.0 CONTINGENCIES

5.1 NOTIFICATIONS AND SHIPMENTS

ACTIONS

DETAILS

NOTE: The emergency 24 hour access phone number is (800) 335-9264.

NOTE: Spare grab sample bombs are stored in the Oil Tank warehouse FIMIS# 1400513.

5.1.1 PERFORM notifications

- NOTIFY Manager, Nuclear Operations Materials Controls that a grab sample has been taken and to initiate acquisition process for shielded sample cask
- NOTIFY BWX Technologies Emergency Sample Coordinator when a grab sample has been collected that will require offsite analysis
- PROVIDE the following information:
 - o Utility and plant name
 - o Name and phone of ChemRad Specialist to whom follow-up communication should be addressed: _____

 - o Number and type of samples to be shipped (i.e. ___ liquid, ___ gaseous, or ___ iodine cartridge)
 - o Measured radiation levels at surface and three feet from shipping container: _____mR/hr.
 - o Estimated shipping time _____, mode of transportation _____, carrier _____, and estimated arrival at BWX Technologies site in Lynchburg, VA
 - o Shipping Address
BWX Technologies
Lynchburg Technology Center
Route 726, Mt. Athos Road
Lynchburg, VA 24506
Attn: Kenneth Long
(804) 522-5982
- All data accumulated per this procedure is to be summarized on Enclosure 1 and forwarded to the Emergency Coordinator via Chemistry supervision

Initial/Date

TECHNICAL SUPPORT CENTER DATA SHEET

REACTOR BUILDING VENT

Gamma Isotopic

Total Activity _____ $\mu\text{Ci/cc}$

Major Contributing Isotopes

ISOTOPE	ACTIVITY
_____	_____ $\mu\text{Ci/cc}$

_____/_____/_____
Initial / Date / Time

RM-A1-RC OPERATION

NOTE: This table is used to determine what phase of automatic operation is in progress if necessary to switch from automatic to manual operation per section 4.5, RM-A1-RC Manual Operation.

	SAMPLE ACTIVITY INCREASING use these steps					SAMPLE ACTIVITY DECREASING use these steps		
	4.5.2	4.5.3	4.5.4	4.5.5	4.5.6	4.5.7	4.5.8	4.5.9
RMV-3						OPEN		
RMV-4		OPEN	OPEN	OPEN			OPEN	
RMV-5					OPEN	OPEN		
RMV-6					OPEN	OPEN		
RMV-8			OPEN	OPEN	OPEN	OPEN	OPEN	
RMV-9				OPEN				
RMV-25	OPEN	OPEN						OPEN

PROCEDURE DEVELOPMENT AND REVISION RECORD

Procedure: CH0630A

New Rev: 2

PRR#: 18678

Title: POST ACCIDENT SAMPLING AND ANALYSIS OF REACTOR BUILDING VENT

MINOR CHANGES

If Minor Changes are included, check the applicable box(es) and provide a list of affected steps.
The following corrections are incorporated throughout:

- | | |
|---|--|
| <input type="checkbox"/> Sentence Structure | <input type="checkbox"/> Redundant words or phrases |
| <input type="checkbox"/> Punctuation | <input type="checkbox"/> Abbreviations |
| <input type="checkbox"/> Capitalization | <input type="checkbox"/> Obviously incorrect units of measure |
| <input type="checkbox"/> Spelling | <input type="checkbox"/> Inadvertently omitted symbols (#, %, etc.) |
| <input checked="" type="checkbox"/> Organizational Changes: position titles, department names, or telephone numbers | <input checked="" type="checkbox"/> Obvious step numbering discrepancies |
| | <input checked="" type="checkbox"/> Format |

The following corrections are incorporated in the step(s) indicated: "Throughout" is used in lieu of Step# if a specific change affects a large number of steps.

Correcting equipment nomenclature that does not agree with field labels or balance of procedure

Changing information that is obviously incorrect and referenced correctly elsewhere

Misplaced decimals that are neither setpoint values nor tolerances

Reference to a procedure when an approved procedure has taken the place of another procedure

Fixing branching points when it is clear the branching steps were originally intended but were overlooked or incorrectly stated due to step number changes

Adding clarifying information such as NOTES and CAUTIONS

Adding words to clarify steps, NOTES, or CAUTIONS which clearly do not change the methodology or intent of the steps

PROCEDURE DEVELOPMENT AND REVISION RECORD

Procedure: CH0630A

New Rev: 2

PRR#: 18678

Title: POST ACCIDENT SAMPLING AND ANALYSIS OF REACTOR BUILDING VENT

NON-INTENT CHANGES

Changes are incorporated for the reasons provided. "Throughout" is used in lieu of Step # if a specific change affects a large number of steps. For new or cancelled procedures the reason is provided.

3.1, 3.2.2, 4.1.1, , 4.1.3,
4.2.2, 4.4.3, 4.5.2, 4.5.3,
4.5.4, 4.5.5, 4.5.6, 4.5.7,
4.5.8, 4.5.10, 5.1.1

Add additional guidance to reduce human performance errors.

4.2.4, 4.2.6, 4.4.7

Update instructions to current process.

Rev. 2

Effective Date 8/29/00

CHEMISTRY SAMPLING PROCEDURE

CH-630B

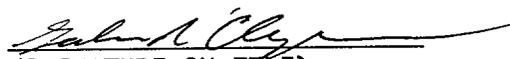
EMERGENCY PLAN IMPLEMENTING PROCEDURE

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

POST ACCIDENT SAMPLING AND ANALYSIS OF AUXILIARY BUILDING VENT

APPROVED BY: Procedure Owner


(SIGNATURE ON FILE)

DATE: 8/28/00

PROCEDURE WRITER: Nuclear Chemistry

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 <u>PURPOSE</u>	1
2.0 <u>REFERENCES</u>	1
2.1 <u>DEVELOPMENTAL REFERENCES</u>	1
2.3 <u>CMIS REFERENCES</u>	2
3.0 <u>PERSONNEL INDOCTRINATION</u>	2
3.1 <u>DESCRIPTION</u>	2
3.2 <u>LIMITS & PRECAUTIONS</u>	2
4.0 <u>INSTRUCTIONS</u>	4
4.1 <u>SAMPLE TEAM CHECKLIST</u>	4
4.2 <u>GAMMA ISOTOPIC ANALYSIS</u>	6
4.3 <u>FILTER GRAB SAMPLE</u>	10
4.4 <u>WSSB-2 GAS GRAB SAMPLE</u>	14
4.5 <u>RM-A2-RC MANUAL OPERATION</u>	19
5.0 <u>CONTINGENCIES</u>	23
5.1 <u>NOTIFICATIONS AND SHIPMENTS</u>	23

ENCLOSURES

1	Technical Support Center Data Sheet	24
2	RM-A2-RC Operations	25

1.0 **PURPOSE**

1.1 This procedure provides instructions for sampling and analyzing gaseous effluent releases from the Auxiliary Building during accident conditions.

2.0 **REFERENCES**

2.1 **DEVELOPMENTAL REFERENCES**

- | 2.1.1 Radiological Emergency Response Plan
- | 2.1.2 NUREG 0737, Post-TMI Requirements
- | 2.1.3 Regulatory Guide 1.97, Instrumentation For Light-Water Cooled Nuclear Power Plants To Assess Plant And Environs Conditions During And Following An Accident
- | 2.1.4 RSP-600, ALARA Program
- | 2.1.5 Applied Physical Technology Volumes A through C (Crystal River Installation PASS manuals)
- | 2.1.6 Drawing M.D. 0211033.003
- | 2.1.7 FD-302-693, Containment Monitoring System
- | 2.1.8 FD-302-694, PASS Containment Monitoring AIM Detection System
- | 2.1.9 FD-302-695, Noble Gas Effluent Monitoring System
- | 2.1.10 FD-302-766, Auxiliary Building Post Accident Sampling

2.3 CMIS REFERENCES

WSV-33, WSV-35, WSV-36, WSV-37, WSV-59, WSV-60, WSV-61, WSV-63, WSV-70, WSV-71, WSV-72, RMV-13, RMV-14, RMV-15, RMV-16, RMV-17, RMV-18, RMV-20, RMV-21, RMV-23, RMV-13, RMV-14, RMV-26, RMV-34, WSP-1, WS-14-FI, RM-A2, AHF-67, MEEL-2, RM-A2-MG, RMP-A2

WSSB-2, RANGE gas grab sampler, 143' AB
RMSB-2A/RMSB-2B, RM-A2 RANGE filter grab sampler, 143' AB
RM-A2-RC, RM-A2 LMH Valve Controller, Control Room
RM-A2-FI, AB Vent Mid/High range flow, Count Room
RM-A2-RE4, RM-A2 Mid Range detector, 143' AB
RM-A2-RE5, RM-A2 High Range detector, 143' AB
WS-13-CE, AIMS monitor, 143' AB
RM-A2-RI4, RM-A2 Mid Range rate meter, Control Room
RM-A2-RI5, RM-A2 High Range rate meter, Control Room
RM-A2-RY4, RM-A2 gas low range rate meter, Control Room
CMP, RANGE Mimic Panel, Count Room

3.0 PERSONNEL INDOCTRINATION

3.1 DESCRIPTION

NOTE: The PASS is powered by the B ES Bus through ACDP-59.

The Post Accident Sampling system is an on-line system designed to sample and evaluate various liquid and gaseous sample streams during accident conditions. The Reactor Building Atmosphere and Noble Gas Effluent Monitoring Subsystem (RANGE) samples the RB atmosphere and gaseous effluents from both the RB and AB Vents.

The Post Accident Sampling system provides a means of performing an in-line gamma isotopic analysis, gas grab sample, filter grab sample, and gaseous activity monitoring. Gaseous activity is monitored with RM-A2-MG (low range), RM-A2-RE4 (mid range), and RM-A2-RE5 (high range) in-line detectors. RM-A2-RC, when selected to AUTO, (AB LMH valve controller) automatically aligns the gaseous monitors based on sample activity. RM-A2-RC may be operated manually.

3.2 LIMITS & PRECAUTIONS

3.2.1 Performance of all or part of this procedure will be done by direction of the Emergency Coordinator.

3.2.2 Entries into the controlled access area must have Radiation Monitoring Team preplanning, concurrence, and coverage as outlined in EM-104, Operation of the Operational Support Center.

- 3.2.3 During post-accident sampling, extremely high radiation exposure levels could be experienced. The ability to perform this procedure and stay within exposure limits will require ALARA pre-planning.
- 3.2.4 Return to the Lab if the dose rate at places requiring work is > 15R/Hr. The 4 REM Total Effective Dose Equivalent(TEDE) whole body exposure limit will be exceeded in 16 minutes at 15R/Hr.
- 3.2.5 All sampling actions are performed at the Main Control Board by Operations or in the Count Room either on the VAX Computer or from CMP (RANGE Mimic Panel) unless otherwise noted.
- 3.2.6 Section 4.1 must be completed prior to any sample team re-entries.
- 3.2.7 AB re-entry is terminated if required tools are not in Post Accident Sample Kit, 143' AB.
- 3.2.8 WS-13-CE (RANGE AIMS) can measure 1.0E-6 $\mu\text{Ci}/\text{cc}$ to 1.0E+5 $\mu\text{Ci}/\text{cc}$ for the Reactor Building Vent sample point.
- 3.2.9 Do not exceed 3 Ci total activity on particulate or iodine filters.
- 3.2.10 WSP-1 may be damaged if operated without complete line-up. WSP-1 is a positive displacement pump.
- 3.2.11 WSV-70 is interlocked with the following valves and will not open if any of these valves are open.
- o WSV-33
 - o WSV-35
 - o WSV-36
 - o WSV-37
- 3.2.12 RMV-26 does not have a separate operator. It is interlocked with RMV-20. When RMV-20 is closed, RMV-26 will open. When RMV-20 is opened, RMV-26 will close.
- 3.2.13 RM-A2-FI reading is multiplied by 0.1 to obtain flow in cfm.
- 3.2.14 RMV-18 is a 3-way valve. OPEN indicates RMV-18 is aligned from RM-A2-RE4 outlet to AB Exhaust Duct. CLOSED indicates RMV-18 is aligned from RM-A2-RE4 outlet to RMP-A2 inlet.

4.0 INSTRUCTIONS

ACTIONS

DETAILS

NOTE: Section 4.1 must be completed prior to any sample team re-entry.

4.1 SAMPLE TEAM CHECKLIST

4.1.1 ASSEMBLE Sample Team and REVIEW applicable procedures.

1. REVIEW the following procedures:

_____ CH-632B, Post Accident Sampling and Analysis of the Auxiliary Building Vent.

_____ EM-104, Operation Of The Operational Support Center

2. LIST personnel performing entry and their dose margins:

Name Dose Margin

Initial/Date

4.1.3 DETERMINE analyses to be performed.

LIST analyses to be performed

Initial/Date

4.1 SAMPLE TEAM CHECKLIST (Cont'd)

ACTIONS	DETAILS
4.1.4 DISCUSS access and exit routes, communication techniques and radiological conditions.	<ul style="list-style-type: none"> <input type="checkbox"/> DISCUSS access route <input type="checkbox"/> DISCUSS exit route <input type="checkbox"/> DISCUSS communication techniques <p style="margin-left: 40px;">TSC phone number _____</p> <ul style="list-style-type: none"> <input type="checkbox"/> PERFORM radio check on channel _____ once outside TSC <p><u>IF</u> obtaining RMSB-2B filter grab sample, <u>THEN</u> DETERMINE the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sample stream expected activity Activity _____ $\mu\text{Ci/cc}$ <input type="checkbox"/> Designated location to transport filter grab sample Location _____ <input type="checkbox"/> Designated location to transport filter grab sample Location _____ <p><u>IF</u> obtaining WSSB-2 gas grab sample, <u>THEN</u> ENSURE the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> MEEL-2, AB Elevator, is operable to transport grab sampler <input type="checkbox"/> Allen wrench, or equivalent, as determined by Chemistry supervision, for removing T-Handle from grab sampler and attaching to new grab sampler <input type="checkbox"/> Knife available, or equivalent, as determined by Chemistry supervision, to cut transit cover strap from lifting eye <input type="checkbox"/> Tie-wrap, or equivalent as determined by Chemistry supervision to attach transit cover to new grab sampler lifting eye

Initial/Date

4.2 GAMMA ISOTOPIC ANALYSIS

ACTIONS	DETAILS
4.2.1 ALIGN RM-A2-RC, AB Manifold Detector Valve Controller. RM-A2-RC is located in Control Room.	___ ENSURE RM-A2-RC selected to AUTO <u>OR</u> ___ ENSURE RM-A2-RC aligned for manual operation per section 4.5, RM-A2-RC Manual Operation
	_____ Initial/Date

CAUTION: WSP-1 may be damaged if operated without complete line-up.

- | | |
|--------------------------|--|
| 4.2.2 PURGE sample line. | 1. OPEN the following valves:
___ RMV-23
___ WSV-61
___ WSV-70

2. ___ START WSP-1
3. ___ VERIFY flow at WS-14-FI
4. ___ <u>IF</u> NO flow indication at WS-14-FI,
<u>THEN</u> STOP WSP-1
<u>AND</u> NOTIFY OSC Chemistry Coordinator
5. ___ PURGE at least 1 minute |
|--------------------------|--|

 Initial/Date

4.2 GAMMA ISOTOPIC ANALYSIS (Cont'd)

ACTIONS	DETAILS
4.2.3 PERFORM pre-analysis checks on WS-13-CE, RANGE AIMS detector.	1. — VERIFY > 50 pounds liquid nitrogen at RANGE liquid nitrogen monitor ***** CAUTION: Do not reset liquid nitrogen monitor unless high voltage bias is adjusted to 0 volts. ***** 2. — ENSURE RANGE detector voltage adjusted per PASS and RANGE AIMS Equipment Logbook 3. — ENSURE weekly calibration check performed within past 7 days per CH-234 as indicated on weekly Count Room QC log sheet in Count Room Task Logbook

Initial/Date

4.2 GAMMA ISOTOPIC ANALYSIS (Cont'd)

ACTIONS	DETAILS
4.2.4 PERFORM Gamma Isotopic Analysis.	<ol style="list-style-type: none"> 1. — LOG ON VAX computer as Username: PASS 2. — SELECT PASS MENU. 3. — SELECT GASEOUS SAMPLING 4. — SELECT AB VENT Sample Point 5. — UPDATE sample parameters 6. — SELECT ACCEPT. 7. — SELECT QUIT key to exit 8. — ENTER LO to log off VAX computer 9. — ATTACH gamma scan to this procedure 10. — NOTIFY OSC Chemistry Coordinator or designee of results
	Gamma Scan ID number(s):
	<hr/> <p style="text-align: center;">_____/_____/_____ Initial/ Date / Time</p>
	<hr/> <p style="text-align: center;">_____/_____/_____ Initial/ Date / Time</p>
	<hr/> <p style="text-align: center;">_____/_____/_____ Initial/ Date / Time</p>
	<ol style="list-style-type: none"> 11. — <u>IF</u> additional Gamma Isotopic Analysis are required, <u>THEN</u> REPEAT steps 1 through 10
	<p style="text-align: right;">_____/_____ Initial/Date</p>

4.2 GAMMA ISOTOPIC ANALYSIS (Cont'd)

ACTIONS	DETAILS
4.2.5 ALIGN system for instrument air purge.	1. — OPEN WSV-63 2. — CLOSE RMV-23 3. — PURGE at least 5 minutes
	<u> </u> / <u> </u> Initial/Date
4.2.6 PERFORM AIMS purge.	1. — LOG ON VAX computer as Username: PASS 2. — SELECT PASS MENU 3. — SELECT Flush Sample Lines 4. — SELECT VENT AIR PURGE 5. — <u>WHEN</u> a low stable count rate is observed on WS-13-CE, Range Rateometer, <u>THEN</u> SELECT RETURN 6. — DEPRESS PF4 TO QUIT 7. — ENTER L0 to log off
	<u> </u> / <u> </u> Initial/Date
4.2.7 SECURE instrument air purge.	1. — STOP WSP-1 2. — CLOSE WSV-63 3. — CLOSE WSV-61 4. — CLOSE WSV-70
	<u> </u> / <u> </u> Initial/Date

4.3 FILTER GRAB SAMPLE

ACTIONS	DETAILS
4.3.1 ALIGN RM-A2-RC, AB Manifold Detector Valve Controller. RM-A2-RC is located in Control Room.	<p>___ ENSURE RM-A2-RC selected to AUTO</p> <p><u>OR</u></p> <p>___ ENSURE RM-A2-RC aligned for manual operation per section 4.5, RM-A2-RC Manual Operation</p>

Initial/Date

4.3.2 DETERMINE filter purge time.

1. ___ RECORD RM-A2-FI flow at Count Room

$$\text{flow rate (cfm)} = \frac{\text{RM-A2-FI}}{\text{indicated flow}} \times 0.1$$

Flow Rate _____ cfm

2. ___ REPORT RM-A2-FI flow to OSC Chemistry Coordinator

NOTE: Total activity on filters is limited to < 3 Ci.

3. ___ DETERMINE sample purge time

$$\text{purge time} = \frac{3E6 \mu\text{Ci}}{\left(\frac{\text{RM-A2-FI}}{\text{Flow}} \text{ (cfm)} \right) \left(\frac{\text{expected (Ci)}}{\text{activity (cc)}} \right) \left(\frac{2.832E4 \text{cc}}{\text{cf}} \right)}$$

Purge Time _____ minutes

Initial/Date

4.3 FILTER GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.3.3 OBTAIN equipment from Post Accident Sampling Kit. Sampling kit is at 143' AB west side of SF pool wall.	OBTAIN the following equipment from Sampling kit: ___ Filter holder release tool ___ Filter cartridge assembly extractor tool ___ 1 filter cartridge assembly with particulate and iodine filters installed ___ 1 Plastic bag ___ Shielded carrying container
	_____/ Initial/Date

4.3.4 INSTALL RMSB-2B filter cartridge assembly. RMSB-2B is located at RM-A2 south end inside cabinet.	1. VERIFY valve control handles in vertical position ___ RMV-13 ___ RMV-14 2. ___ OPEN RMSB-2B shield door 3. ___ ENSURE filter holder released 4. ___ INSTALL new filter cartridge assembly with particulate filter UP 5. ___ ENGAGE filter holder 6. ___ CLOSE shield door
	_____/ Initial/Date

4.3 FILTER GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.3.5 START RMSB-2B sample flow.	1. — ALIGN RMV-13 control handle to horizontal position. 2. — ALIGN RMV-14 control handle to horizontal position 3. — RECORD start time to nearest second
	Start time _____ / _____ / _____ / _____ Date hour min sec
	NOTE: The preferred low dose waiting area is outside AB if purge time is long enough.
	4. — IF purge time is adequate, THEN MOVE to low dose waiting area while collecting sample
	_____ / _____ Initial/Date
4.3.6 STOP sample collection. RMSB-2B is located at RM-A2 south end inside cabinet.	1. — ALIGN RMV-13 control handle to vertical position 2. — RECORD stop time to nearest second
	Stop time _____ / _____ / _____ / _____ Date hour min sec
	3. — ALIGN RMV-14 control handle to the vertical position
	_____ / _____ Initial/Date
4.3.7 PURGE RMSB-2B with instrument air. RMV-34 is located at RM-A2 south end inside cabinet.	1. — OPEN RMV-34 2. — PURGE instrument air for 5 minutes 3. — MOVE to low dose waiting area while purging RMSB-2B 4. — CLOSE RMV-34
	_____ / _____ Initial/Date

4.3 FILTER GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
<p>***** CAUTION: Radiation dose rates may be high with RMSB-2B shield door open. *****</p>	
<p>4.3.8 REMOVE RMSB-2B filter cartridge assembly. RMSB-2B is located at RM-A2 south end inside cabinet.</p>	<p>1. ___ CONCURRENTLY OPEN RMSB-2B shield door and OBSERVE dose rates 2. ___ RELEASE filter holder ***** CAUTION: Step 3 is performed as quickly as possible because filter cartridge assembly dose rate may be high. ***** 3. ___ REMOVE used filter cartridge assembly as follows: o REMOVE filter cartridge assembly o PLACE in plastic bag o PLACE in shielded container 4. ___ CLOSE shield door</p>
<p>_____ Initial/Date</p>	
<p>4.3.9 STORE sample container.</p>	<p>___ TRANSPORT shielded sample containers to designated area ___ STORE shielded sample container</p>
<p>_____ Initial/Date</p>	

4.4 WSSB-2 GAS GRAB SAMPLE

ACTIONS	DETAILS
4.4.1 ALIGN RM-A2-RC, AB Manifold Detector Valve Controller. RM-A2-RC is located in Control Room.	___ ENSURE RM-A2-RC selected to AUTO <u>OR</u> ___ ENSURE RM-A2-RC aligned for manual operation per section 4.5, RM-A2-RC Manual Operation

Initial/Date

4.4.2 PREPARE WSSB-2 for gas grab sample. WSSB-2 is located 143' AB west of elevator.	NOTE: AHF-67 switch is located on wall left of AHF-67. 1. ___ START AHF-67, WSSB-2 exhaust fan
---	--

Initial/Date

CAUTION: WSP-1 may be damaged if operated without complete line-up.

4.4.3 ALIGN for AB Vent grab sample.	1. ___ ENSURE CLOSED WSV-61 2. OPEN the following valves: ___ RMV-23 ___ WSV-59 ___ WSV-60 ___ WSV-70 3. ___ START WSP-1 4. ___ VERIFY flow at WS-14-FI 5. ___ IF NO flow indication at WS-14-FI, THEN STOP WSP-1, AND NOTIFY OSC Chemistry Coordinator 6. ___ PURGE at least 5 minute
--------------------------------------	---

Initial/Date

4.4 WSSB-2 GAS GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.4.4 ISOLATE grab sample. WSSB-2 is located 143' AB west of elevator.	<p>NOTE: WSV-71 and WSV-72 T-Handle operator is attached to WSSB-2.</p> <p>1. ___ CLOSE WSV-72 using T-Handle 2. ___ CLOSE WSV-71 using T-Handle</p> <p style="text-align: right;">_____/_____/_____ Initial/ Date / Time</p>
4.4.5 ALIGN for Instrument Air purge.	<p>1. ___ OPEN WSV-63 2. ___ CLOSE RMV-23</p> <p style="text-align: right;">_____/_____ Initial/Date</p>
4.4.6 PERFORM pre-analysis AIMS detector checks on WS-13-CE, RANGE AIMS detector.	<p>1. ___ VERIFY > 50 pounds of liquid nitrogen at RANGE liquid nitrogen monitor</p> <p>***** CAUTION: Do not reset liquid nitrogen monitor unless high voltage bias is adjusted to 0 volts. *****</p> <p>2. ___ ENSURE RANGE detector high voltage adjusted per PASS and RANGE AIMS Equipment Logbook 3. ___ ENSURE weekly calibration check performed within past 7 days per CH-234 as indicated on weekly Count Room QC log sheet in Count Room Task</p> <p style="text-align: right;">_____/_____ Initial/Date</p>

4.4 WSSB-2 GAS GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.4.7 PURGE WS-13-CE, RANGE AIMS.	1. ___ LOG ON VAX computer as Username: PASS 2. ___ SELECT PASS MENU 3. ___ SELECT Flush Sample Lines 4. ___ SELECT VENT AIR PURGE 5. ___ <u>WHEN</u> a low stable count rate observed on WS-13-CE, Range Ratemeter, <u>THEN</u> SELECT RETURN 6. ___ DEPRESS PF4 TO QUIT 7. ___ ENTER L0 to log off

Initial/Date

4.4.8 RESTORE system line-up.	1. ___ OPEN WSV-61 2. ___ CLOSE WSV-59 3. ___ CLOSE WSV-60 4. ___ PURGE at least 1 minute 5. ___ STOP WSP-1 6. ___ CLOSE WSV-63 7. ___ CLOSE WSV-61 8. ___ CLOSE WSV-70
-------------------------------	--

Initial/Date

4.4 WSSB-2 GAS GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.4.9 REMOVE WSSB-2. WSSB-2 is located 143' AB west of elevator.	<ol style="list-style-type: none">1. ___ OBTAIN 3/4" wrench from Primary lab key locker2. ___ INSTALL grab sampler ramp3. DISCONNECT grab sampler:<ol style="list-style-type: none">a. ___ SQUEEZE disengagement leverb. ___ PUSH engagement handle to rearmost positionc. ___ PULL UP cart to station lock mechanism to release cartd. ___ REMOVE WSSB-2 from sample station4. ___ INSTALL transit cover over quick connects5. ___ TRANSPORT grab sampler to 95' TB crane well6. ___ UNBOLT grab sampler from cart7. ___ REMOVE T-Handle operator from grab sampler
	<p>NOTE: Procedure may be continued while step 8 is completed.</p>
	<ol style="list-style-type: none">8. ___ GO TO section 5.1, Notifications and Shipment, for off-site shipment.

Initial/Date

4.4 WSSB-2 GAS GRAB SAMPLE (Cont'd)

ACTIONS	DETAILS
4.4.10 INSTALL new WSSB-2 grab sampler at sample station. Sample station is located 143' AB west of elevator.	<ol style="list-style-type: none"> 1. ___ BOLT new grab sampler onto cart 2. ___ REMOVE transit cover 3. ___ ATTACH transit cover to lifting ring on grab sampler 4. ___ ATTACH T-Handle to new grab sampler 5. ___ OPEN WSV-72 with T-Handle 6. ___ OPEN WSV-71 with T-Handle 7. ___ TRANSPORT new grab sampler to sample station
	<p>***** CAUTION: When installing WSSB-2, force may damage quick connects. *****</p>
	<p>NOTE: When positioned correctly, WSSB-2 makes metal to metal contact with curved face of sample station.</p>
	<p>NOTE: Several attempts may be necessary align grab sampler.</p>
	<ol style="list-style-type: none"> 8. INSTALL grab sampler <ol style="list-style-type: none"> a. ___ One person GUIDE WSSB-2 into sample station b. ___ Second person PUSH WSSB-2 onto platform c. ___ HALT WSSB-2 several inches from connection point d. ___ SLOWLY PUSH WSSB-2 into sample station e. ___ ENGAGE Cart to Station Locking Mechanism f. ___ PUSH Locking Mechanism handle completely down, DRIVING lock bolt through hole in cart g. ___ GENTLY PULL Engagement Handle. A distinct "click" may be heard. h. ___ ENSURE engagement <ol style="list-style-type: none"> 1. ___ UNLOCK cart from station by pulling up on Cart to Station Locking Mechanism handle 2. ___ MOVE Engagement Handle back and forth 3. ___ If properly connected, cart will move back and forth i. ___ RELOCK cart to station pushing locking mechanism handle completely down, driving lock bolt through hole in cart

Initial/Date

4.5 RM-A2-RC MANUAL OPERATION

ACTIONS

DETAILS

NOTE: RM-A2-RC is located in Control Room behind main control board and all valves are operated at RM-A2-RC.

NOTE: Valve position indication is determined by the red indication light. Red light ON indicates OPEN. Red light OFF indicates CLOSED.

4.5.1 ALIGN RM-A2-RC, AB Manifold LMH Valve Controller, for manual operation.

- ___ IF RM-A2-RC selected to AUTO, THEN PERFORM the following:
 - ___ DETERMINE phase of automatic operation per Enclosure 2, RM-A2-RC Operation
 - ___ POSITION switch for any open valve to ON
 - ___ SELECT RM-A2-RC AUTO/MAN switch to MAN
 - ___ GO TO step determined per Enclosure 2

- ___ ENSURE AUTO/MAN switch selected to MAN

Initial/Date

4.5.2 ALIGN system for low range operation.

1. ENSURE CLOSED the following valves:
 - ___ RMV-15
 - ___ RMV-16
 - ___ RMV-17
 - ___ RMV-18
 - ___ RMV-21
 - ___ RMV-20

2. ___ ENSURE OPEN RMV-26
3. ___ VERIFY flow at RM-A2-FI is 0 cfm at CMP in Count Room
4. ___ MONITOR RM-A2-RY4, RM-A2 Gas Low Range ratemeter.

Initial/Date

4.5 RM-A2-RC MANUAL OPERATION (Cont'd)

ACTIONS	DETAILS
<p>4.5.3 <u>IF</u> RM-A2-RY4 is approximately 1/2 scale increasing, <u>THEN</u> ALIGN system for low range, mid range, and high range parallel operation.</p>	<p>1. — OPEN RMV-16 2. — MONITOR RM-A2-RY4, RM-A2 Gas Low Range ratemeter AND RM-A2-RI4, RM-A2 Mid Range ratemeter</p>
<p>_____ Initial/Date</p>	
<p>4.5.4 <u>IF</u> RM-A2-RY4 is approximately 3/4 scale increasing, <u>AND</u> RM-A2-RI4 is approximately 1/3 scale increasing, <u>THEN</u> ISOLATE RM-A2 low range detector.</p>	<p>1. — OPEN RMV-20 2. — VERIFY CLOSED RMV-26 3. — MONITOR RM-A2-RI4, RM-A2 Mid Range ratemeter AND RM-A2-RI5, RM-A2 High Range ratemeter</p>
<p>_____ Initial/Date</p>	
<p>NOTE: Procedure may continue while completing step 4.5.5.</p>	
<p>4.5.5 <u>IF</u> isolated per step 4.5.4, <u>THEN</u> PURGE RM-A2 low range with instrument air.</p>	<p>1. — OPEN RMV-21 2. — PURGE RM-A2-MG with instrument air at least 35 minutes 3. — <u>WHEN</u> RM-A2-RY4, RM-A2 Gas Low Range ratemeter count rate lowers, <u>THEN</u> CLOSE RMV-21</p>
<p>_____ Initial/Date</p>	
<p>4.5.6 <u>IF</u> RM-A2-RI4 is approximately 3/4 scale increasing, <u>AND</u> RM-A2-RI5 is responding to radiation levels in sample, <u>THEN</u> ISOLATE RM-A2 mid range detector.</p>	<p>1. — OPEN RMV-17 2. — OPEN RMV-18 3. — CLOSE RMV-16 4. — MONITOR RM-A2-RI5, RM-A2 High Range ratemeter</p>
<p>_____ Initial/Date</p>	

4.5 RM-A2-RC MANUAL OPERATION (Cont'd)

ACTIONS	DETAILS
NOTE: Procedure may continue while completing step 4.5.7.	
4.5.7 <u>IF</u> isolated per step 4.5.6, <u>THEN</u> PURGE mid range detector with instrument air.	1. <input type="checkbox"/> OPEN RMV-15 2. <input type="checkbox"/> PURGE RM-A2-RE4 at least 35 minutes 3. <input type="checkbox"/> <u>WHEN</u> RM-A2-RI4, RM-A2 Mid Range ratemeter dose rate lowered, <u>THEN</u> CLOSE RMV-15
	_____ Initial/Date
4.5.8 <u>IF</u> mid range detector isolated per 4.5.6, <u>AND</u> RM-A2-RI5 does not respond to radiation level in sample for at least 5 minutes, <u>THEN</u> ALIGN mid range detector for operation.	1. <input type="checkbox"/> CLOSE RMV-18 2. <input type="checkbox"/> OPEN RMV-16 3. <input type="checkbox"/> CLOSE RMV-17 4. <input type="checkbox"/> MONITOR RM-A2-RI4, RM-A2 Mid Range ratemeter
	_____ Initial/Date
4.5.9 <u>IF</u> mid range detector aligned per step 4.5.8, <u>AND</u> is 1/3 scale decreasing, <u>THEN</u> ALIGN low range detector for operation.	1. <input type="checkbox"/> CLOSE RMV-20 2. <input type="checkbox"/> VERIFY OPEN RMV-26 3. <input type="checkbox"/> CLOSE RMV-16 4. <input type="checkbox"/> MONITOR RM-A2-RY4, RM-A2 Gas Low Range ratemeter
	_____ Initial/Date
4.5.10 <u>IF</u> low range detector aligned per step 4.5.9, <u>THEN</u> PURGE RM-A2 mid range with instrument air.	1. <input type="checkbox"/> OPEN RMV-18 2. <input type="checkbox"/> OPEN RMV-15 3. <input type="checkbox"/> PURGE RM-A2-RE4 at least 35 minutes 4. <input type="checkbox"/> <u>WHEN</u> RM-A2-RI4, RM-A2 Mid Range ratemeter dose rate lowered, <u>THEN</u> CLOSE the following valves: <input type="checkbox"/> RMV-15 <input type="checkbox"/> RMV-18
	_____ Initial/Date

4.5 RM-A2-RC MANUAL OPERATION (Cont'd)

ACTIONS	DETAILS
4.5.11 <u>WHEN</u> manual operation complete, <u>THEN</u> RESTORE RM-A2-RC to automatic operation.	1. <input type="checkbox"/> ENSURE CLOSED the following valves: <input type="checkbox"/> RMV-15 <input type="checkbox"/> RMV-16 <input type="checkbox"/> RMV-17 <input type="checkbox"/> RMV-18 <input type="checkbox"/> RMV-21 <input type="checkbox"/> RMV-20 2. <input type="checkbox"/> ENSURE OPEN RMV-26 3. <input type="checkbox"/> VERIFY flow at RM-A2-FI is 0 cfm 4. <input type="checkbox"/> SELECT RM-A2-RC AUTO/MAN switch to AUTO

Initial/Date

5.0 CONTINGENCIES

5.1 NOTIFICATIONS AND SHIPMENTS

ACTIONS

DETAILS

NOTE: The emergency 24 hour access phone number is (800) 335-9264.

NOTE: Spare grab sample bombs are stored in the Oil Tank warehouse FIMIS # 1400513.

5.1.1 PERFORM notifications.

- ___ NOTIFY Manager, Nuclear Operations Materials Controls that a grab sample has been taken and to initiate acquisition process for shielded sample cask
- ___ NOTIFY BWX Technologies Emergency Sample Coordinator when a grab sample has been collected that will require offsite analysis
- ___ PROVIDE the following information:
 - o Utility and plant name
 - o Name and phone of ChemRad Specialist to whom follow-up communication should be addressed: _____
 - o Number and type of samples to be shipped (i.e. ___ liquid, ___ gaseous, or ___ iodine cartridge)
 - o Measured radiation levels at surface and three feet from shipping container: _____mR/hr
 - o Estimated shipping time _____, mode of transportation _____, carrier _____, and estimated arrival at Framatone Technologies site in Lynchburg, VA _____
 - o Shipping Address:
BWX Technologies
Lynchburg Technology Center
Route 726, Mt. Athos Road
Lynchburg, VA 24506
Attn: Kenneth Long (804) 522-5982
- ___ All data accumulated per this procedure is to be summarized on Enclosure 1 and forwarded to the Emergency Coordinator via Chemistry supervision

Initial/Date

TECHNICAL SUPPORT CENTER DATA SHEET

AUXILIARY BUILDING VENT

Gamma Isotopic

Total Activity _____ $\mu\text{Ci/cc}$

Major Contributing Isotopes

ISOTOPE	ACTIVITY
_____	_____ $\mu\text{Ci/cc}$

_____/_____/_____
Initial / Date / Time

RM-A2-RC OPERATION

NOTE: This table is used to determine what phase of automatic operation is in progress if necessary to switch from automatic to manual operation per section 4.5, RM-A2-RC Manual Operation.

	SAMPLE ACTIVITY INCREASING use these steps					SAMPLE ACTIVITY DECREASING use these steps		
	4.5.2	4.5.3	4.5.4	4.5.5	4.5.6	4.5.7	4.5.8	4.5.9
RMV-15						OPEN		
RMV-16		OPEN	OPEN	OPEN			OPEN	
RMV-17					OPEN	OPEN		
RMV-18					OPEN	OPEN		
RMV-20			OPEN	OPEN	OPEN	OPEN	OPEN	
RMV-21				OPEN				
RMV-26	OPEN	OPEN						OPEN

PROCEDURE DEVELOPMENT AND REVISION RECORD

Procedure: CH0630B New Rev: 2 PRR#: 18679
Title: POST ACCIDENT SAMPLING AND ANALYSIS OF AUXILIARY BUILDING VENT

MINOR CHANGES

If Minor Changes are included, check the applicable box(es) and provide a list of affected steps.
The following corrections are incorporated throughout:

- | | |
|--|--|
| <input type="checkbox"/> Sentence Structure | <input type="checkbox"/> Redundant words or phrases |
| <input type="checkbox"/> Punctuation | <input type="checkbox"/> Abbreviations |
| <input type="checkbox"/> Capitalization | <input type="checkbox"/> Obviously incorrect units of measure |
| <input type="checkbox"/> Spelling | <input type="checkbox"/> Inadvertently omitted symbols (#, %, etc.) |
| <input checked="" type="checkbox"/> Organizational Changes: position titles,
department names, or telephone numbers | <input checked="" type="checkbox"/> Obvious step numbering discrepancies |
| | <input checked="" type="checkbox"/> Format |

The following corrections are incorporated in the step(s) indicated: "Throughout" is used in lieu of Step# if a specific change affects a large number of steps.

-
- Correcting equipment nomenclature that does not agree with field labels or balance of procedure
-
- Changing information that is obviously incorrect and referenced correctly elsewhere
-
- Misplaced decimals that are neither setpoint values nor tolerances
-
- Reference to a procedure when an approved procedure has taken the place of another procedure
-
- Fixing branching points when it is clear the branching steps were originally intended but were overlooked or incorrectly stated due to step number changes
-
- Adding clarifying information such as NOTES and CAUTIONS
-
- Adding words to clarify steps, NOTES, or CAUTIONS which clearly do not change the methodology or intent of the steps

PROCEDURE DEVELOPMENT AND REVISION RECORD

Procedure: CH0630B

New Rev: 2

PRR#: 18679

Title: POST ACCIDENT SAMPLING AND ANALYSIS OF AUXILIARY BUILDING VENT

NON-INTENT CHANGES

Changes are incorporated for the reasons provided. "Throughout" is used in lieu of Step # if a specific change affects a large number of steps. For new or cancelled procedures the reason is provided.

3.1, 3.2, 4.1.1, 4.1.3,
4.2.2, 4.4.3, 4.5.2, 4.5.3,
4.5.4, 4.5.5, 4.5.6, 4.5.7,
4.5.8, 4.5.9, 4.5.10, 5.1.1

Add additional guidance to reduce human performance errors.

4.2.4, 4.2.6, 4.4.7

Update instructions to current process.
