VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

April 22, 2002

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555-0001

Serial No. 02-262
SS&L/BAG R0
Docket No. 50-280
50-281
License No. DPR-32
DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
REVISIONS TO EMERGENCY PLAN IMPLEMENTING PROCEDURES

Pursuant to 10 CFR 50.54(q), enclosed are revisions to five Surry Power Station Emergency Plan Implementing Procedures. The revisions do not implement actions that decrease the effectiveness of our Emergency Plan. The Emergency Plan and Implementing Procedures continue to meet the standards of 10 CFR 50.47(b). Please update your manual by performing the actions described in the enclosed tabulation of changes.

Very truly yours,

Richard H. Blount, Site Vice President
Surry Power Station

Enclosure

Commitments contained in this letter: None.

cc: U. S. Nuclear Regulatory Commission, Region II (2 copies)
Sam Nunn Atlanta Federal Center
61 Forsyth Street S.W., Suite 23 T85
Atlanta, Georgia 30303-8931

Mr. R. A. Musser
NRC Senior Resident Inspector
Surry Power Station

A045

Serial No. 02-262
Surry EPIP Revisions

VIRGINIA ELECTRIC AND POWER COMPANY
REVISION TO SURRY POWER STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURE

Enclosed are revisions to Surry Power Station Emergency Plan Implementing Procedures. Please take the following actions in order to keep your manual updated with the most recent revisions.

REMOVE AND DESTROY:	EFFECTIVE DATE:	INSERT:	EFFECTIVE DATE:
EPIP-4.01, Rev. 16	04/19/00	EPIP-4.01, Rev. 17	04/10/02
EPIP-4.08, Rev. 14	11/29/01	EPIP-4.08, Rev. 15	04/10/02
EPIP-4.09, Rev. 12	11/29/01	EPIP-4.09, Rev. 13	04/10/02
EPIP-4.22, Rev. 04	10/20/94	EPIP-4.22, Rev. 05	04/10/02
EPIP-4.23, Rev. 08	10/20/94	EPIP-4.23, Rev. 09	04/10/02

Emergency Plan Privacy and Proprietary Material have been removed.
Reference Generic Letter No. 81-27

bc: Mr. Michal Small/B. A. Garber – SPS (electronic) (w/o enclosure)
Mr. J. B. Costello - IN2NE (electronic) (w/o enclosure)
Records Management - (IN) c/o Corp Licensing (M. McClure)
GOV 02-054B, IN2SE, Corp Licensing (M. McClure) (w/o enclosure)

CONCURRENCE

See Station Correspondence Review and Approval Form

Commitments (Stated or Implied)/Action Plan

None

Verification of Accuracy:

1. Memorandum R.H. Kulp to Mike Small, dated April 11, 2002, Transmittal of EPIP Revisions to the NRC.

Required Changes to the UFSAR or QA Topical Report

None

VIRGINIA POWER
SURRY POWER STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.01	RADIOLOGICAL ASSESSMENT DIRECTOR CONTROLLING PROCEDURE (With 1 Attachment)	17
		PAGE 1 of 30

PURPOSE

To initially assess emergency conditions, provide protective measures recommendations, establish an emergency organization and direct Health Physics response to an emergency.

ENTRY CONDITIONS

Activation by EPIP-1.01, EMERGENCY MANAGER CONTROLLING PROCEDURE.

Approvals on File

Effective Date 04/10/02

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
_____ 1	INITIATE PROCEDURE: • By: _____ Date: _____ Time: _____	
	NOTE: • During the initial stages of an emergency, the Operations Shift Supervisor may assume the Station Emergency Manager (SEM) position and the HP Shift Supervisor may assume the Radiological Assessment Director (RAD) position. The RAD may report to the Control Room if the TSC is not activated. • Notification of an Alert or higher emergency classification is normally made via Gai-Tronics. The SEM normally informs the RAD of a Notification of Unusual Event declaration via telephone.	
_____ 2	ASK SEM FOR BRIEFING: • Existing plant conditions • Emergency Action Levels (EALs) exceeded • Emergency Classification	
_____ 3	CHECK IF OFFSITE RELEASE - IS OCCURRING OR HAS OCCURRED	GO TO Step 5.
_____ 4	DIRECT INITIATION OF EPIP-4.30, USE OF MIDAS CLASS A MODEL	IF MIDAS NOT available, THEN evaluate release using desk-top calculations: • EPIP-4.08, INITIAL OFFSITE RELEASE ASSESSMENT • EPIP-4.09, SOURCE TERM ASSESSMENT • EPIP-4.10, DETERMINATION OF X/Q

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	CHECK EMERGENCY CLASSIFICATION - NOTIFICATION OF UNUSUAL EVENT	GO TO Step 7.
6	CHECK HP SUPPORT - REQUIRED	IF HP support NOT immediately required, THEN standby to provide support AND GO TO Step 7 when support is required OR WHEN emergency is terminated, THEN GO TO Step 32.
7	EVALUATE ASSIGNING EPIP-4.02, RADIATION PROTECTION SUPERVISOR CONTROLLING PROCEDURE	
8	PROVIDE SUPPORT FOR EMERGENCY OPERATING PROCEDURE (EOP) AND ACCIDENT MITIGATION TASK ACTIVITIES, AS NECESSARY: a) Notify RPS when an EOP or Accident Mitigation Task is planned or in progress b) Make sure priority is given to expediting EOP and Accident Mitigation Task activities	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 9 CHECK EVENT - LIMITING FAULT: GO TO Step 14.

- LOCA - GO TO NOTE prior to Step 10
- Main Steam Line Rupture - GO TO NOTE prior to Step 11
- Steam Generator Tube Rupture - GO TO Step 12
- Fuel Handling Accident - GO TO NOTE prior to Step 13

NOTE: A LOCA may not initially result in a large release, but may produce a large potential for release from containment.

_____ 10 INITIATE RESPONSE TO LOCA:

a) Ask SEM to evacuate Auxiliary Building and Safeguards

b) Block entry until surveys confirm radiological hazards

c) Evaluate manpower support for Post Accident Containment Air or Reactor Coolant sampling

d) Determine crane wall radiation monitor reading

e) GO TO Step 14

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Potential releases from a Main Steam Line Rupture may develop from Containment, Main Steam Safety or AFWPT exhaust.

_____ 11 INITIATE RESPONSE TO MAIN STEAM LINE RUPTURE:

a) Check station ventilation effluent monitors

b) Ask SEM for the following data:

- Location of steam break
- Status of actual or potential Main Steam Safety Valve lift
- Number valves lifted: _____
- Length of time valves remained open (if lifted):_____(min.)
- AFWPT status
- Main Steam and AFWPT exhaust monitor readings
- Assistance in flow rate (lbs/hr) determination

c) GO TO Step 14

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
_____ 12	INITIATE RESPONSE TO STEAM GENERATOR TUBE RUPTURE:	
	a) Ask SEM for the following data: • Status of Air Ejector divert • Number of Main Steam Relief Valves lifted or that may potentially lift:_____ • Length of time valves remained open (if lifted):_____ min. • Assistance in flow rate (lbs/hr) determination • Status of Main Steam supply to AFWPT • Steam Generator Blowdown status	
	b) Check steam supply to AFWPT - ISOLATED	b) IF steam supply to AFWPT NOT isolated, THEN ask SEM to initiate isolation.
	c) Ask SEM place personnel in Emergency Switchgear Room to report Main Steam and AFWPT exhaust monitor readings	

(STEP 12 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

12 INITIATE RESPONSE TO STEAM GENERATOR TUBE RUPTURE: (Continued)

d) Consider blocking access to the following areas until surveyed:

- Service Building Hallway
- Turbine Deck
- Steam Generator Blowdown Cooler, Turbine Building Basement
- Steam Generator Blowdown lines, Auxiliary Building Basement
- Relief Valves, Safeguards Roof
- AFWPT exhaust, Unit #1 or #2 alleyway
- Condensate Polishing Building

e) Evaluate sampling:

- Steam Generator Blowdowns
- Air Ejectors
- Main Steams

f) GO TO Step 14

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Analysis of accidents involving decayed spent fuel should include consideration of onsite skin dose due to Kr-85.

_____ 13 INITIATE RESPONSE TO FUEL HANDLING ACCIDENT:

a) Check event - Fuel cask drop or suspected seal leak — a) GO TO Step 13.d.

b) Evaluate the following:

- Access control in affected area
- Neutron monitoring
- Air sampling to confirm fission product release

c) GO TO Step 14

d) Do the following for Fuel Handling Accident in Spent Fuel Pool or Containment:

1) Ask SEM to evacuate all non-essential personnel from Fuel Building and affected Containment

2) Isolate purge of affected Containment

3) Consider potential radiological problems with Reactor Cavity or Spent Fuel Clean-up System

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE:
- Additional manpower may be needed to assist in offsite dose calculations.
- Initial offsite release assessments should be made using EPIP-4.30, USE OF MIDAS CLASS A MODEL, to quickly assess the release and to recommend protective measures.

_____ 14 CHECK EVENT - RADIOLOGICAL RELEASE: — GO TO Step 18.

a) Initiate effluent sampling if manpower permits — a) Use monitor readings for follow-up assessment.

b) Give consideration to initiating EPIP-4.03, DOSE ASSESSMENT TEAM CONTROLLING PROCEDURE

c) Initiate EPIP-4.30, USE OF MIDAS CLASS A MODEL — c) IF MIDAS NOT available, THEN evaluate release using desk-top calculations:
- EPIP-4.08, INITIAL OFFSITE RELEASE ASSESSMENT
- EPIP-4.09, SOURCE TERM ASSESSMENT
- EPIP-4.10, DETERMINATION OF X/Q

d) Consider having RPS prepare for dispatch of Offsite Monitoring Teams:
- Team assembly
- Preparation of equipment and vehicles

e) Direct initiation of 40CFR302 EPA Notification Requirements and Reportable Quantity calculations in accordance with normal HP procedures

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 15 VERIFY EMERGENCY CLASSIFICATION:

a) Check results of offsite release assessment at Site Boundary greater than or equal to the following:

- 50 mR/hr TEDE

OR

- 250 mR/hr Thyroid CDE

a) GO TO Step 16.

b) Get estimate of current or potential release duration (hours) from SEM

b) IF estimate NOT available, THEN assume 2 hours.

c) Calculate projected dose:

Duration (hours) x Dose Rate = Projected Dose

d) Confirm emergency classification:

RESULTS OF CALCULATION	EMERGENCY CLASSIFICATION
Projected dose greater than or equal to 1 Rem TEDE or 5 Rem Thyroid CDE	General Emergency
Projected dose greater than or equal to 0.1 Rem TEDE or 0.5 Rem Thyroid CDE	Site Area Emergency
% Technical Specifications greater than or equal to 1000%	Alert
% Technical Specifications greater than or equal to 100%	Notification of Unusual Event
Below 100% Technical Specifications	N/A

e) Notify SEM of emergency classification

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
_____ 16	DETERMINE OFFSITE PROTECTIVE MEASURES FOR GENERAL EMERGENCY CLASSIFICATION:	IF classification NOT a General Emergency, THEN GO TO Step 17.
	a) Use Site Boundary 2, 5 and 10 mile TEDE and Thyroid CDE doses from EPIP-4.30, USE OF MIDAS CLASS A MODEL	a) IF MIDAS NOT available, THEN use dose rates from desk-top calculations: • EPIP-4.08, INITIAL OFFSITE RELEASE ASSESSMENT • EPIP-4.09, SOURCE TERM ASSESSMENT • EPIP-4.10, DETERMINATION OF X/Q
	b) Initiate EPIP-4.07, PROTECTIVE MEASURES	
	c) Make recommendations to SEM that address the following: • Protective measures offsite • Distance protective measures are required	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
_____ 17	CHECK LEOF (CEOF) HAS LEAD FOR OFFSITE DOSE ASSESSMENT	Do the following: a) Assure dose assessment result identification number recorded on all pages. b) Record initials on each page to document approval for issuance of results. c) Review offsite release assessment results with SEM. d) Give applicable dose assessment report to State/Local Emergency Communicator: • MIDAS Radiological Status Report (2 pages). • EPIP-4.03, DOSE ASSESSMENT TEAM CONTROLLING PROCEDURE, Attachment 1. e) Provide updated dose assessment results when any of the following occur: • Every 60 minutes during Alert or higher classification. • Within 15 minutes after a classification change. • Change in radiological conditions.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: The following response actions may have to be coordinated by the RAD. These actions are not listed in order of priority.

_____ 18	EVALUATE HP RESPONSE ACTIONS AND DETERMINE RESPONSES ON A PRIORITY BASIS: • Offsite monitoring: GO TO NOTE prior to Step 19 • Injured contaminated personnel: GO TO NOTE prior to Step 20 • Inplant / Onsite radiological assessment: GO TO NOTE prior to Step 21 • TSC activated, establish organization: GO TO Step 22 • Offsite release assessment: GO TO Step 23 • Evacuate non-essential personnel: GO TO Step 24 • Activate LEOF: GO TO Step 25 • Dosimetry for offsite assistance (Fire, rescue squads): GO TO Step 26 • Respiratory Protection: GO TO Step 27 • Relief: GO TO Step 28 • Limiting Fault event (LOCA, Main Steam Line Break, SGTR or Fuel Handling Accident): RETURN TO Step 9 • Radiological release: RETURN TO Step 14	WHEN all necessary response actions addressed, THEN GO TO Step 29.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE:
- A minimum of 2 (two) Offsite Monitoring Teams must be dispatched (i.e., sent into the field) at a Site Area Emergency or General Emergency.
- Plume tracking/offsite monitoring will be the responsibility of the Radiological Assessment Coordinator (RAC) upon LEOF activation.

_____ 19 EVALUATE NEED FOR OFFSITE MONITORING:

a) Consult with Dose Assessment Team Leader:

- Meteorological conditions
- Number of teams needed
- Need for protective clothing
- Projected Whole Body and Thyroid dose rates
- Respiratory protection
- Team location and placement

(STEP 19 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

19 EVALUATE NEED FOR OFFSITE MONITORING: (Continued)

b) Check if TEDE exposure is expected to exceed 5 Rem:

b) GO TO Step 19.c.

- Do calculation using sample results, MIDAS runs or default TEDE/DDE ratio table:

FORMULA:

Exposure time x Dose rate x Ratio TEDE/DDE = Estimated TEDE dose
_____ hours x _____ Rem/hr x _____ Ratio = _____Rem TEDE

TEDE/DDE RATIO TABLE:

ACCIDENT TYPE	RATIO	ACCIDENT TYPE	RATIO
MSLB	49	VCT Rupture	1
SGTR	26	LOCA (Melt, Gap, PC)	3
Fuel Handling	1.5	Locked Rotor	13
WGDT Rupture	1	SRF	1

- Consider placing team further downwind
- Consider initiation of EPIP-4.04, EMERGENCY PERSONNEL RADIATION EXPOSURE

(STEP 19 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

19 EVALUATE NEED FOR OFFSITE MONITORING: (Continued)

c) Check if Thyroid CDE expected to exceed 25 Rem:

c) GO TO Step 19.d.

1) Do calculation using concentration (µCi/cc) based on survey results and actual or projected exposure duration (hours):

_____µCi/cc x 1.57E+6 x _____hours = _____Rem THY CDE

2) Ask SEM for approval to administer radioprotective drugs

3) Consider initiation of EPIP-5.07, ADMINISTRATION OF RADIOPROTECTIVE DRUGS

d) Notify RPS of resource and equipment requirements:

- Number teams required
- Protective clothing required
- Respiratory protection required
- Have teams assemble equipment and vehicles

AND

Have teams notify TSC via radio prior to dispatch

e) RETURN TO Step 18

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: First aid considerations must be given priority over decontamination efforts.

_____ 20 INITIATE RESPONSE TO CONTAMINATED INJURED INDIVIDUAL:

a) Determine the following information:

- Offsite medical treatment - REQUIRED
- Contamination survey confirms personnel contamination
- Clothing removal cannot be used to clear individual

b) Check data indicates need to transport contaminated personnel to hospital

b) RETURN TO Step 18.

c) Have RPS direct initiation of normal HP procedures for response to contaminated injured personnel

d) Have HP representative accompany victim

e) RETURN TO Step 18

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Inplant/Onsite monitoring teams shall be used to assess radiological conditions within the site boundary and to accompany Damage Control, Sample Analysis and Post Accident Sample Teams.

_____ 21 INITIATE INPLANT/ONSITE RADIOLOGICAL ASSESSMENT:

a) Consult with RPS:

- Plant conditions
- Equipment failure
- Elevated radiation monitor readings
- Radiological release points, plume direction and affected areas
- Access control points established
- Recent survey results

b) Help RPS select the following:

- Monitoring and sample locations
- Protective clothing and respiratory protection
- Dosimetry and monitoring devices

(STEP 21 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

21 INITIATE INPLANT/ONSITE RADIOLOGICAL ASSESSMENT: (Continued)

c) Check if survey results (µCi/cc) and exposure time indicate exposure greater than 25 Rem Thyroid CDE:

c) GO TO Step 21.d.

1) Do calculation:

_____µCi/cc x 1.57E+6 x _____hours = _____Rem THY CDE

2) Consider use of SCBA

3) Ask SEM for approval to administer radioprotective drugs

4) Initiate EPIP-5.07, ADMINISTRATION OF RADIOPROTECTIVE DRUGS

5) Get supply of drugs from TSC closet

(STEP 21 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

21 INITIATE INPLANT/ONSITE RADIOLOGICAL ASSESSMENT: (Continued)

d) Check if projected TEDE exposure exceeds 5 Rem:

d) GO TO Step 21.e.

- Do calculation using sample results, MIDAS runs or default TEDE/DDE ratio table:

FORMULA:

Exposure time x Dose rate x Ratio TEDE/DDE = Estimated TEDE dose
_____ hours x _____ Rem/hr x _____ Ratio = _____Rem TEDE

TEDE/DDE RATIO TABLE:

ACCIDENT TYPE	RATIO	ACCIDENT TYPE	RATIO
MSLB	49	VCT Rupture	1
SGTR	26	LOCA (Melt, Gap, PC)	3
Fuel Handling	1.5	Locked Rotor	13
WGDT Rupture	1	SRF	1

- Initiate EPIP-4.04, EMERGENCY PERSONNEL RADIATION EXPOSURE

e) Check if entry required to monitor Damage Control Teams:

e) GO TO Step 21.f.

- Brief RPS on planned activity
- Verify team briefing prior to dispatch

(STEP 21 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21	INITIATE INPLANT/ONSITE RADIOLOGICAL ASSESSMENT: (Continued)	
	f) Determine if radiological conditions require monitoring of emergency response facilities: • Have RPS initiate EPIP-4.17, MONITORING OF EMERGENCY RESPONSE FACILITIES • Have RPS initiate EPIP-4.18, MONITORING OF LEOF	f) GO TO Step 21.g.
	g) WHEN Post Accident Primary Coolant or Containment Air sample requested, THEN do the following: 1) Determine system to be used: • Normal sampling systems OR • Contingency sampling systems 2) Notify RPS of preferred sampling system 3) Ask RPS to support Post Accident sampling	g) GO TO Step 21.h.

(STEP 21 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21	INITIATE INPLANT/ONSITE RADIOLOGICAL ASSESSMENT: (Continued)	
	h) WHEN radiological release and plume direction changes or release increases, THEN do the following: • Notify RPS • Consider need for re-surveys • Direst establishment of new access control points based on revised survey data	h) RETURN TO Step 18.
	i) RETURN TO Step 18	
_____ 22	ESTABLISH EMERGENCY ORGANIZATION:	
	a) Establish Dose Assessment Team: • Assign one team leader and two team members • Assign EPIP-4.03, DOSE ASSESSMENT TEAM CONTROLLING PROCEDURE	
	b) Establish Radiation Protection Supervisor position AND Assign EPIP-4.02, RADIATION PROTECTION SUPERVISOR CONTROLLING PROCEDURE	
	c) RETURN TO Step 18	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
_____ 23	REVIEW OFFSITE RELEASE ASSESSMENTS:	
	a) Check radiological monitoring and meteorological parameters available to Dose Assessment Team from ERFCS (MIDAS imports ERFCS automatically)	a) IF parameters NOT available from ERFCS, THEN give completed copy of Attachment 1 to Dose Assessment Team.
	b) Review offsite release assessments	b) RETURN TO Step 18.
	c) RETURN TO Step 15	
_____ 24	EVALUATE NEED TO EVACUATE/SHELTER NON-ESSENTIAL PERSONNEL:	
	a) Determine onsite exposure of non-essential personnel:	
	1) Review plant surveys and samples	
	2) Calculate iodine dose commitment using radioiodine concentration (µCi/cc) based on air sample data and actual or projected exposure duration (hours):	
	_____µCi/cc x 1.57E+6 x _____hours = _____Rem THY CDE	

(STEP 24 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24	EVALUATE NEED TO EVACUATE/SHELTER NON-ESSENTIAL PERSONNEL: (Continued)	
	b) Check if results indicate onsite exposure of non-essential personnel greater than 1 Rem TEDE or 5 Rem Thyroid CDE	b) Do one of the following: • IF onsite exposure for non-essential personnel greater than or equal to 0.5 Rem TEDE or 1 Rem Thyroid CDE, THEN recommend sheltering AND GO TO Step 24.d OR • IF onsite exposure for non-essential personnel less than 0.5 Rem TEDE or 1 Rem Thyroid CDE, THEN GO TO Step 24.d
	c) Make recommendation to SEM for evacuation of non-essential personnel	
	d) Consider early release of personnel upon Alert if plant conditions appear to degrade	
	e) Do the following if non-essential personnel are to be evacuated: • Review offsite release assessments • Check direction of plume • Determine appropriate evacuation route and remote assembly area	e) RETURN TO Step 18.

(STEP 24 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

24 EVALUATE NEED TO EVACUATE/SHELTER NON-ESSENTIAL PERSONNEL: (Continued)

f) Have RPS assign EPIP-4.21, EVACUATION AND REMOTE ASSEMBLY AREA MONITORING

g) Have RPS do the following:

1) Tell survey team to notify TSC when departing from station and arriving at Remote Assembly Area

2) Dispatch Remote Assembly Area monitoring team

h) Notify SEM of Emergency Assembly Area monitoring status

i) RETURN TO Step 18

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 25 INITIATE LEOF ACTIVATION:

a) Give information to Radiological Assessment Coordinator:

- Existing plant conditions
- Current offsite dose projections
- HP actions underway

b) Have Dose Assessment Team Leader brief Radiological Assessment Coordinator:

- Status and location of Offsite Monitoring Teams
- Meteorological data
- Radiation Monitoring System data
- Sample analysis data

c) Have RPS assign EPIP-4.18, MONITORING OF LEOF

d) RETURN TO Step 18

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 26 HAVE DOSIMETRY ISSUED TO OFFSITE RESPONDERS:

a) Consult with RPS:

- Arrival time of offsite support (fire, rescue squads)
- Dosimetry requirements

b) Ask RPS to consider having individual meet fire or rescue squad prior to entry onsite in order to supply dosimetry

c) RETURN TO Step 18

_____ 27 EVALUATE RESPIRATORY PROTECTION REQUIREMENTS:

a) Assess results of air sample analyses

b) Recommend relocation of non-essential personnel from areas where high airborne activity is expected or airborne activity > 0.30 DAC

c) Initiate EPIP-4.05, RESPIRATORY PROTECTION

d) RETURN TO Step 18

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 28 GIVE TURNOVER TO RELIEF:

a) WHEN a more senior HP individual arrives onsite

OR

WHEN relief is needed, THEN brief successor:

- Existing plant conditions
- Emergency Classification
- Offsite release assessments
- HP actions underway

b) Notify SEM of change in position

c) Stay with relief for about 30 minutes to ensure proper turnover

d) RETURN TO Step 18

_____ 29 CHECK EMERGENCY - CONTINUES — GO TO Step 32.

_____ 30 CONSULT WITH SEM AND RPS AS TO INCREASING OR DECREASING TRENDS

_____ 31 RETURN TO NOTE PRIOR TO STEP 2

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 32 INITIATE EVENT TERMINATION AND RECOVERY ACTIONS:

a) Verify SEM declared event - TERMINATED

b) Notify RPS and RAC of event termination

c) Evaluate continued use of monitoring teams for data collection

d) Consult with SEM about recovery phase:

- Access control to outside contaminated areas
- Return to normal access control areas throughout site
- Assistance requirements:
  - Decontamination efforts
  - HP support personnel
  - Radwaste packaging and disposal

_____ 33 INITIATE REPLACEMENT OF PROCEDURES AND EMERGENCY EQUIPMENT

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
_____ 34	TERMINATE EPIP-4.01:	
	• Give completed EPIP-4.01, forms and other applicable records to the Emergency Procedures Coordinator in the TSC	• Give to STA.
	• Completed by: _____	
	Date: _____	
	Time: _____	

-END-

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.01	RADIOLOGICAL DATA WORKSHEET	17
ATTACHMENT 1		PAGE 1 of 1

Name:_____; Date:_____; Time:_____

METEOROLOGICAL DATA

Wind Direction (from): _____ Stability Class: _____

Affected Sectors: _____ Precipitation: _____

Wind Speed (mph): _____

RADIATION SYSTEM MONITORING DATA

Vent Vent: VG-110:_____cpm VG-131:_____µCi/sec
_____µCi/cc
VG-123:_____mR/hr

Process Vent: GW-102:_____cpm GW-130:_____µCi/sec
_____µCi/cc
GW-122:_____mR/hr

Containment, Inside:

High Range: RMS-127:_____mR/hr RMS-227:_____mR/hr

RMS-128:_____mR/hr RMS-228:_____mR/hr

Containment, Outside:

High Range: RMS-161:_____mR/hr RMS-261:_____mR/hr

Air Ejector: SV-111:_____cpm SV-211:_____cpm

Main Steam: MS-124:_____mR/hr MS-224:_____mR/hr

MS-125:_____mR/hr MS-225:_____mR/hr

MS-126:_____mR/hr MS-226:_____mR/hr

AFWPT: MS-129:_____mR/hr MS-229:_____mR/hr

VIRGINIA POWER
SURRY POWER STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.08	INITIAL OFFSITE RELEASE ASSESSMENT (With 6 Attachments)	15
		PAGE 1 of 12

PURPOSE

Use of backup (manual) dose assessment calculations to assess consequences of actual or potential offsite releases.

ENTRY CONDITIONS

Any of the following:

1. EPIP-4.01, RADIOLOGICAL ASSESSMENT DIRECTOR CONTROLLING PROCEDURE.
2. EPIP-4.03, DOSE ASSESSMENT TEAM CONTROLLING PROCEDURE.
3. CPIP-6.2, RADIOLOGICAL ASSESSMENT COORDINATOR.
4. Direction by the Station Emergency Manager.

Approvals on File

Effective Date 04/10/02

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 1 INITIATE PROCEDURE:

- By: _____

Date: _____

Time: _____

NOTE: An initial offsite release assessment should be performed within 15 minutes of declaration of a General Emergency.

_____ 2 CHECK IF CURRENT EVENT CLASSIFICATION - NOTIFICATION OF UNUSUAL EVENT OR ALERT

IF unknown, THEN GO TO Step 3

OR

IF Site Area or General Emergency, THEN GO TO NOTE prior to Step 6.

NOTE: Evaluation of percent release limits in this procedure makes assumptions about flow rate, isotopic mixture and detector response. Further analysis upon completion of this procedure will be necessary to quantify releases.

_____ 3 CHECK IF EMERGENCY INVOLVES LIQUID RELEASE

GO TO NOTE prior to Step 5.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Results of Discharge Tunnel and SRF Liquid Monitor are not additive. The Discharge Tunnel is considered the final liquid effluent release point.

_____ 4 DETERMINE PERCENT RELEASE LIMIT FOR LIQUID RELEASE:

a) Get monitor indications:

- Discharge Tunnel:_____cpm
- SRF RRM-131:_____cpm

b) Use the following equations:

Discharge Tunnel:
cpm x 3.0E-3 = % Release Limit

_____ x 3.0E-3 = _____%

RRM-131:
cpm x 3.37E-4 = % Release Limit

_____ x 3.37E-4 = _____%

c) Compare percent release limit with emergency classification criteria:

- Percent release limit GREATER THAN OR EQUAL TO 1000% - ALERT
- Percent release limit GREATER THAN OR EQUAL TO 100% - NOTIFICATION OF UNUSUAL EVENT
- Percent release limit LESS THAN 100% - RELEASE WITHIN LIMITS

d) Notify RAD or RAC of event classification based on percent release limit for liquid release

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Surry Radwaste Facility (SRF) Vent Monitor RRM-101 information is available from the SRF Control Room.

_____ 5 DETERMINE PERCENT RELEASE LIMIT FOR GASEOUS RELEASE:

IF NO gaseous release, THEN GO TO Step 10.

a) Get highest value of the following:

- VG-110 (cpm)
- VG-131 (µCi/sec and µCi/cc)
- GW-102 (cpm)
- GW-130 (µCi/sec and µCi/cc)
- SV-111 (cpm)
- SV-211 (cpm)
- RRM-101 (cpm)

a) IF all values are NOT available, THEN get value of monitor in alarm.

b) Get vacuum (inches Hg) for the following:

- VG-110
- GW-102

b) IF all values or value for monitor in alarm NOT available, THEN ask RAD or RAC to determine (as applicable):

- If monitor count rate correction needed.
- Estimated vacuum values for monitor(s).

c) Check - INCHES Hg > 3

c) GO TO Step 5.e.

d) Correct monitor count rates for vacuum

$$\frac{\text{Monitor cpm}}{(30 - \text{inches Hg})/30} = \text{Corrected cpm}$$

(STEP 5 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	DETERMINE PERCENT RELEASE LIMIT FOR GASEOUS RELEASE: (Continued)	
	e) Get effluent flow rate (cfm) of the following: • Vent Vent flow rate • Process Vent flow rate • Air ejector flow rate • SRF Vent flow rate	e) IF flow rate NOT available, THEN use design flow rate: • Vent Vent = 172,000 cfm • Process Vent = 310 cfm • Air Ejector = 25 cfm • SRF Vent = 51,340 cfm
	f) Record on Attachment 1 AND Determine total percent release limit	
	g) Compare percent release limit with emergency classification criteria: • Percent release limit GREATER THAN OR EQUAL TO 1000% - ALERT • Percent release limit GREATER THAN OR EQUAL TO 100% - NOTIFICATION OF UNUSUAL EVENT • Percent release limit LESS THAN 100% - RELEASE WITHIN LIMITS	
	h) Notify RAD or RAC of event classification based on percent release limit for gaseous release	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE:
- No release through Air Ejector(s) should be assumed if Air Ejector is diverted to containment.
- The total dose rate from each pathway should be calculated using Attachment 2, 3 and/or 4 if the release is from more than one pathway.

_____ 6 DETERMINE SITE BOUNDARY DOSE RATE (mrem/hr) FOR VENTILATION RELEASE:

a) Ask SEM (via RAD or RAC) to have someone observe the increasing or decreasing trends of the monitor

b) Check if release pathway is through any of the following:

- Process Vent
- Vent Vent
- Air Ejector
- SRF Vent

b) IF release is through the Main Steam System, THEN GO TO Step 7

OR

IF release is from containment leakage, THEN GO TO Step 8.

(STEP 6 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	DETERMINE SITE BOUNDARY DOSE RATE (mrem/hr) FOR VENTILATION RELEASE: (Continued)	
	c) Check if monitors for affected pathway - OPERABLE: • Kaman Science • Eberline (SRF) • Victoreen	c) IF Kaman Science Monitor inoperable or offscale, THEN do the following: 1) Get parameters: • Stability Class • Wind Speed (mph) • mR/hr from VG-123 or GW-122 • Flow rate (cfm) 2) GO TO Step 6.e. OR IF SRF Eberline Monitor inoperable, THEN ask RAD or RAC for guidance OR IF Victoreen Monitor offscale or inoperable, THEN do the following: 1) Use Kaman Science Monitor 2) GO TO Step 6.d.

(STEP 6 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

6 DETERMINE SITE BOUNDARY DOSE RATE (mrem/hr) FOR VENTILATION RELEASE: (Continued)

d) Get the following information from RAD or RAC:

1) Monitor number of interest

2) Highest cpm (corrected for vacuum if necessary), µCi/sec and µCi/cc from monitor of interest

3) Flow rate (cfm) for release pathway

4) Stability Class

5) Wind Speed

e) Record above data (less Stability Class) on Attachment 2

f) Get X/Q and conversion factors from Attachment 5:

- Site Boundary X/Q for Stability Class in effect
- Monitor Conversion Factor (MCF) based on accident type
- TEDE DCF
- THY DCF

g) Record X/Q and conversion factors on Attachment 2

h) Determine Site Boundary TEDE and THY CDE, mrem/hr, using Attachment 2

i) Record results of Attachment 2 on Attachment 6

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE:
- No release is assumed from the AFWPT pathway if the AFWPT is isolated.
- Results of Attachments 2 and 3 are cumulative if the release is through both the Main Steam System and Ventilation System.

_____ 7 DETERMINE SITE BOUNDARY DOSE RATE (mrem/hr) - MAIN STEAM SYSTEM:

a) Check if actual or potential release pathway through Main Steam Safety Valves or Auxiliary Feedwater Pump Turbine Exhaust (AFWPT)

a) GO TO Step 8.

b) Get number and mR/hr of the monitor(s) of interest from SEM (via RAD or RAC):

Unit 1	Unit 2
Main Steam	Main Steam
MS-124 (A Safety Valves)	MS-224 (A Safety Valves)
MS-125 (B Safety Valves)	MS-225 (B Safety Valves)
MS-126 (C Safety Valves)	MS-226 (C Safety Valves)
Unit 1 AFWPT	Unit 2 AFWPT
MS-129	MS-229

c) Get the following information from RAD or RAC:

- Stability Class
- Wind Speed
- Number of Main Steam Safety Valves that have lifted or may potentially lift
- Status of AFWPT isolation

(STEP 7 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

7 DETERMINE SITE BOUNDARY DOSE RATE (mrem/hr) - MAIN STEAM SYSTEM: (Continued)

d) Get X/Q and conversion factors from Attachment 5:

- Site Boundary X/Q for Stability Class in effect
- Monitor Conversion Factor (MCF) based on accident type
- TEDE DCF
- THY DCF

e) Record monitor readings (mR/hr), X/Q, wind speed, # valves and conversion factors on Attachment 3

f) Determine Site Boundary TEDE and THY CDE, mrem/hr, using Attachment 3

g) Record results of Attachment 3 on Attachment 6

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Results of Attachments 2, 3 and 4 are cumulative if the release is through the Ventilation System, Main Steam System and Containment.

_____ 8 DETERMINE SITE BOUNDARY DOSE RATE (mrem/hr) - CONTAINMENT LEAKAGE:

a) Check if actual or potential release pathway from Containment Leakage

a) IF NO release pathway from containment, THEN GO TO Step 9.

b) Get CHRRMS reading, R/hr

Unit 1	Unit 2
RMS-127	RMS-227
RMS-128	RMS-228

c) Get the following information from RAD or RAC:

- Stability Class
- Wind Speed

d) Get X/Q and conversion factors from Attachment 5:

- Site Boundary X/Q for Stability Class in effect
- Monitor Conversion Factor (MCF) based on accident type
- TEDE DCF
- THY DCF

e) Record highest monitor reading for affected unit(s) (R/hr), X/Q, wind speed and conversion factors on Attachment 4

f) Determine Site Boundary TEDE and THY CDE, mrem/hr, using Attachment 4

g) Record results of Attachment 4 on Attachment 6

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 9 DETERMINE DOSE RATES (mrem/hr) AT 2, 5 AND 10 MILES:

a) Use Attachment 6

b) Add results of appropriate release pathways:

- Vent (Attachment 2)
- Main Steam (Attachment 3)
- Containment (Attachment 4)

c) Determine Stability Class correction factor for distance of interest

d) Do calculation

AND

Determine TEDE and THY CDE at 2, 5 and 10 miles

e) Report results to RAD or RAC

_____ 10 TERMINATE EPIP-4.08:

- Give completed EPIP-4.08, forms and other applicable records to the RAD or RAC
- Completed by: _____

Date: _____

Time: _____

-END-

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.08	% RELEASE LIMIT WORKSHEET	15
ATTACHMENT 1		PAGE 1 of 1

Date:_____; Time:_____

% RELEASE LIMIT

VENT VENT:

	CPM *	x	CFM	x	CF	=	%		
VG-110:	_____	x	_____	x	4.96 E-8	=	_____	Highest %	
	µCi/sec	x	CF			=	%		
VG-131:	_____	x	3.52 E-3			=	_____		
	µCi/cc	x	CFM		CF	=	%		
VG-131:	_____	x	_____	x	1.66	=	_____		

* Correction for vacuum may be necessary. Refer to Step 5.c.

PROCESS VENT:

	CPM *	x	CFM	x	CF	=	%		
GW-102:	_____	x	_____	x	3.07 E-9	=	_____	Highest %	
	µCi/sec	x	CF			=	%		
GW-130:	_____	x	2.18 E-5			=	_____		
	µCi/cc	x	CFM		CF	=	%		
GW-130:	_____	x	_____	x	1.03 E-2	=	_____		

* Correction for vacuum may be necessary. Refer to Step 5.c.

UNIT 1 AIR EJECTOR:

	CPM	x	CFM	x	CF	=	%
SV-111:	_____	x	_____	x	7.16 E-8	=	_____

UNIT 2 AIR EJECTOR:

	CPM	x	CFM	x	CF	=	%
SV-211:	_____	x	_____	x	7.16 E-8	=	_____

SURRY RADWASTE FACILITY:

	CPM	x	CFM	x	CF	=	%
RRM-101:	_____	x	_____	x	1.74 E-6	=	_____

Completed by: _____ TOTAL % RELEASE LIMIT: _____

Date/Time: _____/_____

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.08	VENT RELEASE SITE BOUNDARY DOSE RATE	15
ATTACHMENT 2		PAGE 1 of 3

NOTE: • Site Boundary X/Q and Monitor Conversion Factors (MCF) are provided on Attachment 5.

• VG-123 and GW-122 should only be used when KAMAN or Normal Range Monitors are offscale or inoperable.

Date:_____; Time:_____

VENT VENT:

VG-110: (CPM * x CFM x X/Q x MCF) / WINDSPEED = Value

(_____ x _____ x _____ x _____) / _____ = _____

VG-131: (µCi/sec x 1.0E-3 x X/Q) / WINDSPEED = Value

(_____ x 1.0E-3 x _____) / _____ = _____

VG-131: (µCi/cc x CFM x 4.72E-1 x X/Q) / WINDSPEED = Value

(_____ x _____ x 4.72E-1 x _____) / _____ = _____

VG-123: (mr/hr x CFM x X/Q x MCF) / WINDSPEED = Value

(_____ x _____ x _____ x _____) / _____ = _____

* Correction for vacuum may be necessary.
Refer to Steps 6.d.2 and 5.c.

Record highest Vent Vent value (mrem-Ci/Rem-m^3) above on Page 3 of Attachment 2.

AIR EJECTOR:

SV-111: (CPM x CFM x X/Q x MCF) / WINDSPEED = Value

(_____ x _____ x _____ x _____) / _____ = _____

SV-211: (CPM x CFM x X/Q x MCF) / WINDSPEED = Value

(_____ x _____ x _____ x _____) / _____ = _____

TOTAL OF AIR EJECTORS = _____

Record sum of Air Ejector values on Page 3 of Attachment 2.

NOTE: • Site Boundary X/Q and Monitor Conversion Factors (MCF) are provided on Attachment 5.

• VG-123 and GW-122 should only be used when KAMAN or Normal Range Monitors are offscale or inoperable.

PROCESS VENT:

GW-102: (CPM * x CFM x X/Q x MCF) / WINDSPEED = Value

(_____ x _____ x _____ x _____) / _____ = _____

GW-130: (µCi/sec x 1.0E-3 x X/Q) / WINDSPEED = Value

(_____ x 1.0E-3 x _____) / _____ = _____

GW-130: (µCi/cc x CFM x 4.72E-1 x X/Q) / WINDSPEED = Value

(_____ x _____ x 4.72E-1 x _____) / _____ = _____

GW-122: (mr/hr x CFM x X/Q x MCF) / WINDSPEED = Value

(_____ x _____ x _____ x _____) / _____ = _____

* Correction for vacuum may be necessary.
Refer to Steps 6.d.2 and 5.c.

Record highest Process Vent value (mrem-Ci/Rem-m^3) above on Page 3 of Attachment 2.

SURRY RADWASTE FACILITY:

RRM-101: (CPM x CFM x X/Q x MCF) / WINDSPEED = Value

(_____ x _____ x _____ x _____) / _____ = _____

Record Surry Radwaste Facility value on Page 3 of Attachment 2.

__ 1. Record the following monitor values in left-hand column of table below:

- Highest Vent Vent value from Attachment 2 Page 1
- Sum of Air Ejector values from Attachment 2 Page 1
- Highest Process Vent value from Attachment 2 Page 2
- Surry Radwaste Facility value from Attachment 2 Page 2

__ 2. Record TEDE and THY CDE Dose Conversion Factors (DCFs) from Attachment 5 in top box of middle and right-hand columns in table below.

__ 3. Multiply monitor values in left-hand column by TEDE DCF and THY CDE DCF. Record result(s) in intersecting space.

__ 4. Sum values in middle and right-hand columns to determine Site Boundary TEDE and THY CDE mrem/hr for vent release.

	TEDE DCF from Attachment 5: _____	THY CDE DCF from Attachment 5: _____
HIGHEST VENT VENT VALUE: _____		
SUM OF AIR EJECTOR VALUES: _____		
HIGHEST PROCESS VENT VALUE: _____		
SURRY RADWASTE FACILITY: _____		N/A
SUM OF VENT VENT, PROCESS VENT, AIR EJECTORS AND SURRY RADWASTE FACILITY	SUM TEDE mrem/hr: _____	SUM THY CDE mrem/hr: _____

Completed by: _____

Date/Time: _____ / _____

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.08	MAIN STEAM RELEASE - SITE BOUNDARY DOSE RATE	15
ATTACHMENT 3		PAGE 1 of 2

NOTE: Monitor Conversion Factors (MCF) and Site Boundary X/Q are provided on Attachment 5.

Date:_____; Time:_____

UNIT 1 MAIN STEAM:

(mR/hr x # Valves x X/Q x MCF) / WINDSPEED = Value

MS-124:(_____ x _____ x _____ x _____) / _____ = _____

MS-125:(_____ x _____ x _____ x _____) / _____ = _____

MS-126:(_____ x _____ x _____ x _____) / _____ = _____

TOTAL OF UNIT 1 MAIN STEAM = _____

UNIT 1 AFWPT:

(mR/hr x X/Q x MCF) / WINDSPEED = Value

MS-129:(_____ x _____ x _____) / _____ = _____

UNIT 2 MAIN STEAM:

(mR/hr x # Valves x X/Q x MCF) / WINDSPEED = Value

MS-224:(_____ x _____ x _____ x _____) / _____ = _____

MS-225:(_____ x _____ x _____ x _____) / _____ = _____

MS-226:(_____ x _____ x _____ x _____) / _____ = _____

TOTAL OF UNIT 2 MAIN STEAM = _____

UNIT 2 AFWPT:

(mR/hr x MCF x X/Q) / WINDSPEED = Value

MS-229:(_____ x _____ x _____) / _____ = _____

__ 1. Record the following monitor values in left-hand column of table below (enter N/A if unit NOT affected):

- Total Main Steam value for affected unit(s)
- AFWPT value for affected unit(s)

__ 2. Record TEDE and THY CDE Dose Conversion Factors (DCFs) from Attachment 5 in top box of middle and right-hand columns in table below.

__ 3. Multiply monitor values in left-hand column by TEDE DCF and THY CDE DCF. Record result(s) in intersecting space.

__ 4. Sum values in middle and right-hand columns to determine Site Boundary TEDE and THY CDE mR/hr for Main Steam release (sum of Main Steam and AFWPT).

	TEDE DCF from Attachment 5: _____	THY CDE DCF from Attachment 5: _____
TOTAL OF UNIT 1 MAIN STEAM VALUES: _____		
UNIT 1 AFWPT VALUE: _____		
TOTAL OF UNIT 2 MAIN STEAM VALUES: _____		
UNIT 2 AFWPT VALUE: _____		
SUM OF AFFECTED UNIT('s) MAIN STEAM AND AFWPT	TEDE mrem/hr: _____	THY CDE mrem/hr: _____

Completed by: _____

Date/Time: _____ / _____

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.08	CONTAINMENT RELEASE - SITE BOUNDARY DOSE RATE	15
ATTACHMENT 4		PAGE 1 of 1

NOTE: • Monitor Conversion Factors (MCF), Site Boundary X/Q, TEDE Dose Conversion Factors (TEDE DCF) and Thyroid CDE Factors (THY DCF) are provided on Attachment 5.

• The CHRRMS Monitor Conversion Factor is calculated for design leak rate of 0.1% per day.

Date:_____; Time:_____

CONTAINMENT: (R/hr x X/Q x MCF) / WINDSPEED = Value

RMS-127 or RMS-128 (_____ x _____ x _____) / _____ = _____

RMS-227 or RMS-228: (_____ x _____ x _____) / _____ = _____

__ 1. Record result of calculation above in left-hand column of table below (enter N/A if unit NOT affected):

__ 2. Record TEDE and THY CDE Dose Conversion Factors (DCFs) from Attachment 5 in top box of middle and right-hand columns in table below.

__ 3. Multiply monitor value in left-hand column by TEDE DCF and THY CDE DCF. Record result(s) in intersecting space.

__ 4. Sum values in middle and right-hand columns to determine Site Boundary TEDE and THY CDE mrem/hr for Containment release.

	TEDE DCF from Attachment 5: _____	THY CDE DCF from Attachment 5: _____
UNIT 1 CONTAINMENT VALUE: _____		
UNIT 2 CONTAINMENT VALUE: _____		
SUM OF AFFECTED UNIT('s) CONTAINMENT(s)	TEDE mrem/hr: _____	THY CDE mrem/hr: _____

Completed by: _____

Date/Time: _____/_____

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.08	SITE BOUNDARY X/Q VALUES, MONITOR CONVERSION FACTORS, TEDE FACTORS, AND THYROID CDE FACTORS	15
ATTACHMENT 5		PAGE 1 of 1

X/Q, SITE BOUNDARY:

STABILITY CLASS						
A	B	C	D	E	F	G
4.82 E-5	1.61 E-4	3.28 E-4	7.54 E-4	1.2 E-3	1.87 E-3	2.44 E-3

MONITOR CONVERSION FACTORS (MCF):

MONITOR	MSLB	SGTR	FHA	WGDT	VCT	LOCA MELT	LOCA GAP	LOCA PC	LKD. ROTOR	NORMAL	SRF
VG-110	1.3E-8	1.3E-8	1.4E-8	------	------	7.6E-9	7.0E-9	1.3E-8	------	1.4E-8	------
VG-123	22.8	15.3	56.6	------	------	1.47	1.40	16.2	------	36.6	------
GW-102	------	------	------	1.07E-7	1.31E-7	------	------	------	------	1.38E-7	------
GW-122	------	------	------	58.1	17.4	------	------	------	------	37.5	------
MS-1(2)24 MS-1(2)25 MS-1(2)26	5.6E+3	4.5E+3	------	------	------	------	------	------	3.87E+2	3.1E+3	------
MS-1(2)29	1.2E+4	1.25E+4	------	------	------	------	------	------	1.9E+3	7.5E+3	------
SV-111 SV-211	2.3E-9	1.8E-9	------ ------	------ ------	------ ------	2.3E-10	2.3E-10	1.7E-9	2.4E-10	1.7E-9	------
RMS-1(2)27 RMS-1(2)28	------	------	------	------	------	7.3E-2	6.9E-2	1.6E-1	-------	------	------
RRM-101	------	------	------	------	------	------	-----	------	-------	1.9E-8	2.6E-7

TEDE DOSE CONVERSION FACTORS (TEDE DCF):

MSLB	SGTR	FHA	WGDT	VCT	LOCA MELT	LOCA GAP	LOCA PC	LKD. ROTOR	SRF
5.5E+3	2.8E+3	3.1E+1	1.78E+1	4.0E+1	1.4E+3	1.8E+3	1.4E+2	7.2E+3	2.1E+2

THYROID CDE DOSE CONVERSION FACTORS (THY DCF):

	MSLB	SGTR	FHA	WGDT	VCT	LOCA MELT	LOCA GAP	LOCA PC	LKD. ROTOR	SRF
UNFILTERED	2.0E+4	5.7E+3	6.8E-1	0	0	7.9E+3	1.6E+4	6.6E+1	3.7E+4	0
FILTERED	2.5E+2	6.9E+1	6.8E-2	0	0	7.9E+2	1.6E+3	6.6E+0	------	0

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.08	DETERMINATION OF 2, 5 AND 10 MILE DOSE RATES	15
ATTACHMENT 6		PAGE 1 of 1

STABILITY CLASS CORRECTION FACTOR

MILES	A	B	C	D	E	F	G
2	1.37E-2	1.12E-2	4.27E-2	6.37E-2	8.33E-2	1.28E-1	2.38E-1
5	6.02E-3	2.36E-3	8.84E-3	1.59E-2	2.42E-2	3.74E-2	7.79E-2
10	3.11E-3	1.24E-3	2.80E-3	5.84E-3	1.00E-2	1.55E-2	3.24E-2

CALCULATION:

SUM OF TEDE:
ATT. 2: _____
ATT. 3: _____
ATT. 4: _____
SUM: _____

TEDE DOSE RATE, SITE BOUNDARY mrem/hr — x

CORRECTION FACTOR 2 miles: — = — TEDE mrem/hr 2 miles:

CORRECTION FACTOR 5 miles: — = — TEDE mrem/hr 5 miles:

CORRECTION FACTOR 10 miles: — = — TEDE mrem/hr 10 miles:

SUM OF THY CDE:
ATT. 2: _____
ATT. 3: _____
ATT. 4: _____
SUM: _____

THY. CDE DOSE RATE SITE BOUNDARY mrem/hr — x

CORRECTION FACTOR 2 miles: — = — THY CDE mrem/hr 2 miles:

CORRECTION FACTOR 5 miles: — = — THY CDE mrem/hr 5 miles:

CORRECTION FACTOR 10 miles: — = — THY CDE mrem/hr 10 miles:

VIRGINIA POWER
SURRY POWER STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.09	SOURCE TERM ASSESSMENT (With 6 Attachments)	13
		PAGE 1 of 13

PURPOSE

To provide guidance for assessing radioactive releases.

ENTRY CONDITIONS

Any of the following:

1. EPIP-4.01, RADIOLOGICAL ASSESSMENT DIRECTOR CONTROLLING PROCEDURE.
2. EPIP-4.03, DOSE ASSESSMENT TEAM CONTROLLING PROCEDURE.
3. CPIP-6.2, RADIOLOGICAL ASSESSMENT COORDINATOR.

Approvals on File

Effective Date 04/10/02

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 1 INITIATE PROCEDURE:

- By: _____

Date: _____

Time: _____

NOTE:
- Unless otherwise indicated, the Radiological Assessment Director/ Radiological Assessment Coordinator should be consulted when requesting action or information.
- Source term units are expressed in Ci/sec.
- Source term calculations based on monitor readings should be used for initial assessment and to establish trends. Sampling should be performed to more accurately determine source term.

_____ 2 CHECK IF ACTUAL OR POTENTIAL FOR RELEASE FROM CONTAINMENT EXISTS

IF event does NOT involve potential or actual containment release, THEN determine source term from any of the following:

- Effluent sample: GO TO Step 4

OR

- Sample of Station Inventory: GO TO Step 7

OR

- Station monitors: GO TO Step 8.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 3 DETERMINE CONTAINMENT SOURCE TERM FROM ANY OF THE FOLLOWING:

- Containment Air Sample: GO TO Step 9

OR

- Containment High Range Monitor: GO TO Step 10

NOTE: Results of each pathway analysis should be recorded on separate worksheets if more than one pathway is sampled.

_____ 4 DETERMINE SOURCE TERM FROM EFFLUENT SAMPLE:

a) Request initiation of EPIP-4.24, GASEOUS EFFLUENT SAMPLING DURING AN EMERGENCY, for sampling of appropriate effluent pathway:

- Ventilation Vent
- Process Vent
- Air Ejector(s)

b) Get monitor reading:

- Maximum: _____
- Reading at time of sample: _____

c) Have Count Room analyze sample:

- Request initiation of EPIP-4.26, HIGH ACTIVITY SAMPLE ANALYSIS, for high activity samples

(STEP 4 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	DETERMINE SOURCE TERM FROM EFFLUENT SAMPLE: (Continued)	
	d) Record nuclide activity on Attachment 1, left column AND Add results to determine Noble Gas and Iodine concentration	d) IF iodine sample NOT taken, THEN continue assessment AND RETURN TO Step 4.d when results are available.
	e) Continue if this is an initial source term assessment	e) GO TO Step 4.g.
	f) Check if sample taken at maximum monitor reading	f) IF sample NOT taken at time of maximum reading, THEN determine corrected µCi/cc for both Noble Gas and Iodine: $\frac{\text{MAX READING}}{\text{READING AT TIME OF SAMPLE}} \times \mu\text{Ci/cc} = \text{CORRECTED } \mu\text{Ci/cc}$
	g) Get effluent flow rate (cfm)	
	h) Record flow rate on Attachment 2	
	i) Record Noble Gas and Iodine concentration on Attachment 2: • Use corrected µCi/cc from Step 4.f (if required)	• IF correction was NOT required, THEN use activity from Attachment 1.
	j) Use Attachment 2 to determine Noble Gas and Iodine release rate, Ci/sec for each pathway	
	k) Add Ci/sec for applicable pathways at end of Attachment 2	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
_____ 5	DETERMINE DDE, TEDE AND THYROID CDE DOSE CONVERSION FACTORS BASED ON SAMPLE RESULTS:	
	a) Use Attachment 1 that was previously filled out for gross activity determination	a) Do Steps 4.a through 4.d AND GO TO Step 5.b.
	b) Do calculations on Attachment 1 to determine the following for each nuclide: • Sample DDE DCF • Sample TEDE DCF • Sample THY CDE DCF	
	c) Add results of Sample DDE, Sample TEDE and Sample THY CDE columns to determine total DDE DCF, TEDE DCF and THY CDE DCF	
	d) Determine TEDE/DDE ratio: $\frac{\text{TEDE DCF}}{\text{DDE DCF}}$ = _____Ratio TEDE/DDE	
	e) Give source term results, Ci/sec, and TEDE/DDE ratio to RAD or RAC	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
_____ 6	DETERMINE SITE BOUNDARY DOSE RATES BASED ON EFFLUENT SAMPLE RESULTS:	
	a) Ask RAD or RAC if Site Boundary dose rate calculation based on effluent sample - DESIRED	a) GO TO Step 13.
	b) Record Sample TEDE DCF and Sample THY CDE DCF from Attachment 1 on to Attachment 3	
	c) Get effluent flow rate (cfm) for each affected pathway	
	d) Record CFM on Attachment 3	
	e) Determine Stability Class and wind speed: • Ask RAD or RAC	
	f) Use Attachment 3 Site Boundary X/Q value for appropriate Stability Class and divide by wind speed	
	g) Record corrected X/Q value on calculation line for each affected pathway	
	h) Do calculations to determine Site Boundary TEDE and THY CDE dose rate, mrem/hr	
	i) Give results to RAD or RAC	
	j) GO TO Step 13	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: An error in calculation of gas volume may result due to water level in a tank. Water volume should be subtracted from design volume of the tank if the tank has water in it.

_____ 7 DETERMINE SOURCE TERM FROM STATION INVENTORY:

a) Check if release originated from a gas storage tank (e.g., Waste Gas Decay Tank, Volume Control Tank, etc.)

a) RETURN TO Step 2.

b) Have sample taken from appropriate tank

c) Have Count Room analyze sample:

- Request initiation of EPIP-4.26, HIGH ACTIVITY SAMPLE ANALYSIS, for high activity samples

d) Record sample activity on Attachment 1, left column

e) Use Attachment 1 to calculate gross Noble Gas and Iodine activity

f) Determine release volume (in ft^3):

$$\text{VOLUME } (ft^3) = \frac{P_1 \times V_1 \times T_2}{T_1 \times P_2}$$

- P_1 = Pressure before release, PSIA
- P_2 = Pressure after release, PSIA
- V_1 = Design volume of tank, ft^3
- T_1 = Temperature before release, °K
  = [(°F - 32)/1.8] + 273
- T_2 = Temperature after release, °K
  = [(°F - 32)/1.8] + 273

(STEP 7 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

7 DETERMINE SOURCE TERM FROM STATION INVENTORY: (Continued)

g) Determine release volume in milliliters (mls):

_____ x 2.832 E+4 = _____ mls

VOLUME (ft^3) x 2.832 E+4 = VOLUME (mls)

h) Record results on Attachment 2, Station Inventory section:

- Noble Gas activity
- Iodine activity
- Volume of release in mls
- Duration of release in seconds

i) Use Attachment 2 to determine Noble Gas and Iodine release rate, Ci/sec

j) Add Ci/sec from all pathways of concern at bottom of Attachment 2

k) Give results to RAD or RAC

l) GO TO Step 13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE:
- Effluent flow rates may not be needed for Kaman, Main Steam, AFWPT or Containment monitor calculations.
- Kaman monitors are the primary method of assessment. Should Kaman monitors be inoperable, then assessments should continue using Vent Vent or Process Vent Normal and/or High Range monitors.

_____ 8 DETERMINE SOURCE TERM FROM STATION MONITORS:

a) Get monitor readings and effluent flow rates (cfm) for release pathway(s) of concern:

- VG-110, VG-131 and VG-123
- GW-102, GW-130 and GW-122
- SV-111
- SV-211

- Main Steam Readings
- AFWPT readings
- Unit 1 Containment: Higher of RMS-127 or -128
- Unit 2 Containment: Higher of RMS-227 or -228

b) Record monitor readings and flow rates (where applicable) on Attachment 4

c) Determine accident type

d) Determine status of effluent charcoal filtration

e) Determine Monitor Conversion Factors (MCF) and Iodine Conversion Factors (Iodine CF) from Attachment 5

f) Record Conversion Factors on Attachment 4

g) Do calculations on Attachment 4 to determine Iodine and Noble Gas release rates, Ci/sec

h) Add Ci/sec from all pathways of concern

i) Give results to RAD or RAC

j) GO TO Step 13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Source term is expressed as Curies in Step 9 below.

_____ 9 DETERMINE SOURCE TERM FROM CONTAINMENT SAMPLE:

a) Ask RAD/RAC if a Containment Air sample is required

a) IF containment air sample NOT required, THEN GO TO Step 10.

b) Record sample results on Attachment 1, left column

b) IF sample results NOT immediately available, THEN GO TO Step 10

AND

RETURN TO Step 9.b when results are available.

c) Determine gross activity for Noble Gas and Iodine (sum results)

d) Record results on Attachment 2, Containment Sample section

e) Check release - IN PROGRESS

e) GO TO Step 9.i

(STEP 9 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

9 DETERMINE SOURCE TERM FROM CONTAINMENT SAMPLE: (Continued)

f) Record effluent flow rate (cfm) on Attachment 2

f) IF effluent flow rate NOT known, THEN do the following:

1) Ask Technical Support Team or Engineering Department for flow rate assessment

2) Get containment pressure (P_1, psia) and temperature (T_1, °K)

3) Calculate volume (mls):

$$\frac{1.05E+12 \times P_1}{T_1}$$ = VOLUME (mls)

where T_1 = (°F - 32/1.8) + 273

4) Determine total Curies available for release:

NG (µCi/ml) _____ x Volume (mls) _____ x 10^{-6} = NG Curies _____

Iodine (µCi/ml) _____ x Volume (mls) _____ x 10^{-6} = Iodine Curies _____

5) GO TO Step 11.

g) Use Attachment 2 to determine source term (Ci/sec)

h) GO TO Step 11

(STEP 9 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

9 DETERMINE SOURCE TERM FROM CONTAINMENT SAMPLE: (Continued)

i) Determine potential source term (Ci/sec):

1) Record 1.3 cfm for containment flow rate on Attachment 2

2) Use Attachment 2 to calculate Ci/sec

3) GO TO Step 11

_____ 10 DETERMINE SOURCE TERM FROM CONTAINMENT MONITOR:

a) Record dose rate (R/hr) from Containment High Range Monitor of affected unit:

Unit 1 Higher of RM-127 or RM-128:_____

Unit 2 Higher of RM-227 or RM-228:_____

b) Record number of hours since LOCA: _____

c) Use Attachment 6 to determine Curies (Ci) Noble Gas and Iodines in containment air available for release

d) Determine release rate (Ci/sec):

_____Ci Noble Gas x 3.5E-8 = _____Ci/sec Noble Gas

_____Ci Iodine x 3.5E-8 = _____Ci/sec Iodine

e) Give results to RAD or RAC

_____ 11 CHECK IF MORE THAN ONE RELEASE PATHWAY INVOLVED — GO TO Step 13.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

_____ 12 RETURN TO STEP 2

_____ 13 TERMINATE EPIP-4.09

AND

RETURN TO PROCEDURE IN EFFECT:

- Give completed EPIP-4.09, forms and other applicable records to the Radiological Assessment Director/Radiological Assessment Coordinator
- By: _____

  Date: _____

  Time: _____

-END-

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.09	NOBLE GAS, IODINE AND DOSE CONVERSION FACTOR WORKSHEET USING SAMPLE ANALYSIS RESULTS	13
ATTACHMENT 1		PAGE 1 of 1

Sample Identification: _____; Sample Time: _____

NOTE:
- Total Noble Gas and Iodine activity, µCi/ml, are for use on Attachment 2.
- Total TEDE DCF and THY CDE DCF are for use on Attachment 3.

NUCLIDE	ACTIV. µCi/ml	EPA DDE DCF	SAMPLE DDE	EPA TEDE DCF	SAMPLE TEDE	EPA THY CDE DCF	SAMPLE THY CDE
Kr-83M	_____	NA					
Kr-85	_____	x 1.3 =	_____	x 1 =	_____		
Kr-85M	_____	x 93 =	_____	x 1 =	_____		
Kr-87	_____	x 510 =	_____	x 1 =	_____		
Kr-88	_____	x 1300 =	_____	x 1 =	_____		
Kr-89	_____	x 1200 =	_____	x 1 =	_____		
Xe-131M	_____	x 4.9 =	_____	x 1 =	_____		
Xe-133	_____	x 20 =	_____	x 1 =	_____		
Xe-133M	_____	x 17 =	_____	x 1 =	_____		
Xe-135	_____	x 140 =	_____	x 1 =	_____		
Xe-135M	_____	x 250 =	_____	x 1 =	_____		
Xe-137	_____	x 110 =	_____	x 1 =	_____		
Xe-138	_____	x 710 =	_____	x 1 =	_____		
TOTAL NOBLE GAS, µCi/ml: _____			CONTINUE ADDING DOWN		CONTINUE ADDING DOWN		
I-125	_____	x 6.3 =	_____	x 4762 =	_____	x 32 =	_____
I-129	_____	x 4.8 =	_____	x 43750 =	_____	x 33 =	_____
I-131	_____	x 220 =	_____	x 241 =	_____	x 24.5 =	_____
I-132	_____	x 1400 =	_____	x 3.5 =	_____	x 1.6 =	_____
I-133	_____	x 350 =	_____	x 43 =	_____	x 14.6 =	_____
I-134	_____	x 1600 =	_____	x 1.9 =	_____	x 0.43 =	_____
I-135	_____	x 950 =	_____	x 8.5 =	_____	x 4.7 =	_____
TOTAL IODINE, µCi/ml: _____			TOTAL DDE DCF: _____		TOTAL TEDE DCF: _____		TOTAL THY CDE DCF: _____

Completed by: _____
Date/Time: _____ / _____

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.09	SAMPLE EFFLUENT Ci/sec WORKSHEET	13
ATTACHMENT 2		PAGE 1 of 1

MONITOR	µCi/ml		CFM				Ci/sec NOBLE GAS	Ci/sec IODINE
VENT:	N.G.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=	_____	
	IOD.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=		_____
PV:	N.G.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=	_____	
	IOD.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=		_____
AIR EJECTOR #1:								
	N.G.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=	_____	
	IOD.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=		_____
AIR EJECTOR #2:								
	N.G.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=	_____	
	IOD.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=		_____

STATION INVENTORY:									
	N.G.	x	VOLUME (mls)	x	1.0E-6	/	SECONDS		
	_____	x	_____	x	1.0E-6	/	_____ =	_____	
	IOD.	x	VOLUME (mls)	x	1.0E-6	/	SECONDS		
	_____	x	_____	x	1.0E-6	/	_____ =		_____

CONTAINMENT SAMPLE:								
	N.G.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=	_____	
	IOD.	x	CFM	x	4.72E-4			
	_____	x	_____	x	4.72E-4	=		_____

SUM Ci/sec: _____ NG _____ IOD

Completed by: _____

Date/Time: _____ / _____

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.09	SAMPLE EFFLUENT SITE BOUNDARY DOSE RATE WORKSHEET	13
ATTACHMENT 3		PAGE 1 of 1

NOTE: TEDE and Thyroid CDE factors from Attachment 1 are to be applied to this worksheet.

X/Q, SITE BOUNDARY:

STABILITY CLASS						
A	B	C	D	E	F	G
4.82E-5 Windspeed	1.61E-4 Windspeed	3.28E-4 Windspeed	7.54E-4 Windspeed	1.20E-3 Windspeed	1.87E-3 Windspeed	2.44E-3 Windspeed

MONITOR	TEDE DCF OR THY CDE DCF		CFM			X/Q WINDSPEED		Site Boundary TEDE mrem/hr	Site Boundary THY. CDE mrem/hr
VENT:	TEDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
	_____	x	_____	x 4.72E-1	x	_____	=	_____	
	THY CDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
	_____	x	_____	x 4.72E-1	x	_____	=		_____
PV:	TEDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
	_____	x	_____	x 4.72E-1	x	_____	=	_____	
	THY CDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
	_____	x	_____	x 4.72E-1	x	_____	=		_____
AIR EJECTOR #1:									
	TEDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
	_____	x	_____	x 4.72E-1	x	_____	=	_____	
	THY CDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
	_____	x	_____	x 4.72E-1	x	_____	=		_____
AIR EJECTOR #2:									
	TEDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
	_____	x	_____	x 4.72E-1	x	_____	=	_____	
	THY CDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
	_____	x	_____	x 4.72E-1	x	_____	=		_____

STATION INVENTORY:								
TEDE	x	VOLUME (mls)	x 1.0E-3 / SECONDS	x	X/Q/WINDSP.			
_____	x	_____	x 1.0E-3 / ____	x	_____	=	_____	
THY CDE	x	VOLUME (mls)	x 1.0E-3 / SECONDS	x	X/Q/WINDSP.			
_____	x	_____	x 1.0E-3 / ____	x	_____	=		_____
CONTAINMENT SAMPLE:								
TEDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
_____	x	_____	x 4.72E-1	x	_____	=	_____	
THY CDE	x	CFM	x 4.72E-1	x	X/Q/WINDSPEED			
_____	x	_____	x 4.72E-1	x	_____	=		_____

Completed by: _____

Date/Time: _____/_____

SUM mrem/hr: _____ TEDE _____ THY CDE

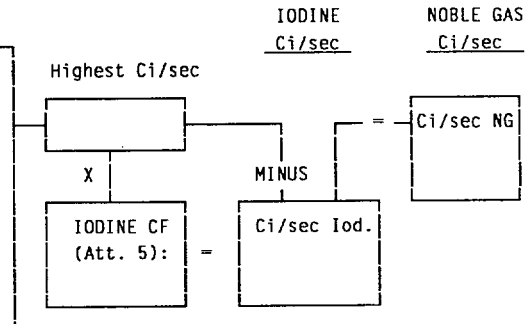
NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.09	MONITOR Ci/sec WORKSHEET	13
ATTACHMENT 4		PAGE 1 of 2

NOTE: Monitor Conversion Factors (MCF) and Iodine Conversion Factors (Iodine CF) are provided on Attachment 5).

Date:_____; Time:_____

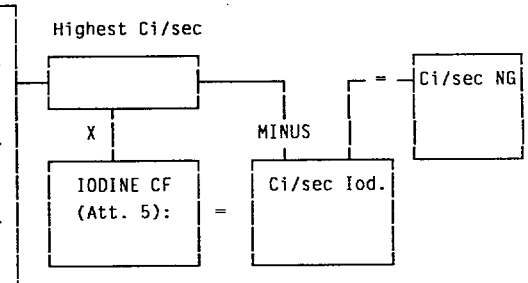
VENT VENT:

	CPM	x	MCF	x	CFM	=	Ci/sec
VG-110:	_____	x	_____	x	_____	=	_____
	µCi/sec	x	1.00E-6			=	Ci/sec
VG-131:	_____	x	1.00E-6			=	_____
	µCi/cc	x	4.72E-4	x	CFM	=	Ci/sec
VG-131:	_____	x	4.72E-4	x	_____	=	_____
	mR/hr	x	MCF	x	CFM	=	Ci/sec
VG-123:	_____	x	_____	x	_____	=	_____



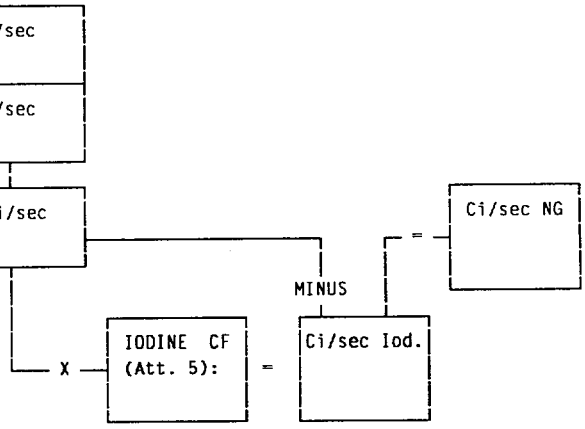
PROCESS VENT:

	CPM	x	MCF	x	CFM	=	Ci/sec
GW-102:	_____	x	_____	x	_____	=	_____
	µCi/sec	x	1.00E-6			=	Ci/sec
GW-130:	_____	x	1.00E-6			=	_____
	µCi/cc	x	4.72E-4	x	CFM	=	Ci/sec
GW-130:	_____	x	4.72E-4	x	_____	=	_____
	mR/hr	x	MCF	x	CFM	=	Ci/sec
GW-122:	_____	x	_____	x	_____	=	_____



AIR EJECTOR:

	CPM	x	MCF	x	CFM	=	Ci/sec
SV-111:	_____	x	_____	x	_____	=	
	CPM	x	MCF	x	CFM	=	Ci/sec
SV-211:	_____	x	_____	x	_____	=	



NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.09	MONITOR Ci/sec WORKSHEET	13
ATTACHMENT 4		PAGE 2 of 2

IODINE Ci/sec | NOBLE GAS Ci/sec

MAIN STEAM:

	mR/hr	x	# valves	x	MCF	=	Ci/sec
MS-124:	_____	x	_____	x	_____	=	_____
MS-125:	_____	x	_____	x	_____	=	_____
MS-126:	_____	x	_____	x	_____	=	_____
MS-224:	_____	x	_____	x	_____	=	_____
MS-225:	_____	x	_____	x	_____	=	_____
MS-226:	_____	x	_____	x	_____	=	_____

SUM OF Ci/sec → [ ] X [IODINE CF (Att. 5):] = MINUS [Ci/sec Iod.] = [Ci/sec NG]

AFWPT:

	mR/hr	x	MCF	=	Ci/sec
MS-129:	_____	x	_____	=	_____
MS-229:	_____	x	_____	=	_____

SUM OF Ci/sec → [ ] X [IODINE CF (Att. 5):] = MINUS [Ci/sec Iod.] = [Ci/sec NG]

CONTAINMENT: NOTE: Monitor Conversion Factor includes 0.1% design basis leak rate.

	R/hr	x	MCF	=	Ci/sec
RMS-127 or RMS-128	_____	x	_____	=	_____
RMS-227 or RMS-228	_____	x	_____	=	_____

SUM OF Ci/sec → [ ] X [IODINE CF (Att. 5):] = MINUS [Ci/sec Iod.] = [Ci/sec NG]

TOTAL Curies/sec:
Sum above results of applicable pathways for Iodine and for Noble gas.

[TOTAL Ci/sec IOD] [TOTAL Ci/sec NG]

Completed by: _____
Date/Time: _____/_____

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.09	MONITOR CONVERSION FACTORS AND IODINE CONVERSION FACTORS	13
ATTACHMENT 5		PAGE 1 of 1

MONITOR CONVERSION FACTORS (MCF):

MONITOR	MSLB	SGTR	FHA	WGDT	VCT	LOCA MELT	LOCA GAP	LOCA PC	LKD. ROTOR	NORMAL	SRF
VG-110	1.3E-11	1.3E-11	1.4E-11	------	------	7.6E-12	7.0E-12	1.3E-11	------	1.4E-11	------
VG-123	2.28E-2	1.53E-2	5.66E-2	------	------	1.47E-3	1.40E-3	1.62E-2	------	3.66E-2	------
GW-102	------	------	------	1.07E-10	1.31E-10	------	------	------	------	1.38E-10	------
GW-122	------	------	------	5.81E-2	1.74E-2	------	------	------	------	3.75E-2	------
MS-1(2)24 MS-1(2)25 MS-1(2)26	5.6E+0	4.5E+0	------	------	------	------	------	------	3.87E-1	3.1E+0	------
MS-1(2)29	1.2E+1	1.25E+1	------	------	------	------	------	------	1.9E+0	7.5E+0	------
SV-111 SV-211	2.3E-12	1.8E-12	------	------	------	2.3E-13	2.3E-13	1.7E-12	2.4E-13	1.7E-12	------
RMS-1(2)27 RMS-1(2)28	------	------	------	------	------	7.3E-5	6.9E-5	1.6E-4	-------	------	------
RRM-101	------	------	------	------	------	------	------	------	-------	1.9E-11	2.6E-10

IODINE CONVERSION FACTORS (IODINE CF):

	MSLB	SGTR	FHA	WGDT	VCT	LOCA MELT	LOCA GAP	LOCA PC	LKD. ROTOR	SRF
UNFILTERED	1.7E-1	1.0E-1	2.4E-3	0	0	3.8E-1	5.4E-1	3.21E-2	2.55E-1	0
FILTERED	2.1E-3	1.2E-3	2.4E-4	0	0	3.8E-2	5.4E-2	3.21E-3	------	0

NOTE:
- No letdown or sprays are assumed available.
- Containment Air concentration (μCi/cc) = Ci Cont. Air x 1.96E-5.
- RCS concentration (μCi/cc) = Ci Cont. Air x 3.83E-3.
- Data is given for 0, 1, 2 and 4 hours after LOCA occurs.

HOURS AFTER LOCA	CHRRMS R/hr	EVENT DESCRIPTION	Ci N.G. Cont. Air	Ci IODINE (HALOGEN) Cont. Air	RCS D.E. I-131 μCi/ml
0	1.3E+6	100% NG, 50% HAL Released to Cont. Air	7.2E+8 Ci	3.87E+8 Ci	1.77E+5 μCi/ml
	1.3E+5	10% NG, 5% HAL Released to Cont. Air	7.2E+7 Ci	3.87E+7 Ci	1.77E+4 μCi/ml
	1.3E+4	1% NG, .5% HAL Released to Cont. Air	7.2E+6 Ci	3.87E+6 Ci	1.77E+3 μCi/ml
	4.5E+4	100% GAP Released to Cont. Air	2.16E+7 Ci	1.55E+7 Ci	7.11E+3 μCi/ml
	4.5E+3	10% GAP Released to Cont. Air	2.16E+6 Ci	1.55E+6 Ci	7.11E+2 μCi/ml
	4.5E+2	1% GAP Released to Cont. Air	2.16E+5 Ci	1.55E+5 Ci	7.11E+1 μCi/ml
	1.54	1% Failed Fuel Primary Gas Release	1.49E+4 Ci	5.05E+2 Ci	6.20E-1 μCi/ml

HOURS AFTER LOCA	CHRRMS R/hr	EVENT DESCRIPTION	Ci N.G. Cont. Air	Ci IODINE (HALOGEN) Cont. Air
1	5.0E+5	100% NG, 50% HAL Released to Cont. Air	3.13E+8 Ci	2.38E+8 Ci
	5.0E+4	10% NG, 5% HAL Released to Cont. Air	3.13E+7 Ci	2.38E+7 Ci
	5.0E+3	1% NG, .5% HAL Released to Cont. Air	3.13E+6 Ci	2.38E+6 Ci
	1.80E+4	100% GAP Released to Cont. Air	9.33E+6 Ci	9.54E+6 Ci
	1.80E+3	10% GAP Released to Cont. Air	9.33E+5 Ci	9.54E+5 Ci
	1.80E+2	1% GAP Released to Cont. Air	9.33E+4 Ci	9.54E+4 Ci
	1.3	1% Failed Fuel Primary Gas Release	1.47E+4 Ci	4.60E+2 Ci

NOTE:
- No Letdown or Sprays are assumed available.
- Containment Air concentration (μCi/cc) = Ci Cont. Air x 1.96-5.
- RCS concentration (μCi/cc) = Ci Cont. Air x 3.83-3.
- Data is given for 0, 1, 2 and 4 hours after LOCA occurs.

HOURS AFTER LOCA	CHRRMS R/hr	EVENT DESCRIPTION	Ci N.G. Cont. Air	Ci IODINE (HALOGEN) Cont. Air
2	3.7E+5	100% NG, 50% HAL Released to Cont. Air	2.75E+8 Ci	1.97E+8 Ci
	3.7E+4	10% NG, 5% HAL Released to Cont. Air	2.75E+7 Ci	1.97E+7 Ci
	3.7E+3	1% NG, .5% HAL Released to Cont. Air	2.75E+6 Ci	1.97E+6 Ci
	1.4E+4	100% GAP Released to Cont. Air	8.24E+6 Ci	7.92E+6 Ci
	1.4E+3	10% GAP Released to Cont. Air	8.24E+5 Ci	7.92E+5 Ci
	1.4E+2	1% GAP Released to Cont. Air	8.24E+4 Ci	7.92E+4 Ci
	1.2	1% Failed Fuel Primary Gas Release	1.45E+4 Ci	4.28E+2 Ci

HOURS AFTER LOCA	CHRRMS R/hr	EVENT DESCRIPTION	Ci N.G. Cont. Air	Ci IODINE (HALOGEN) Cont. Air
4	2.80E+5	100% NG, 50% HAL Released to Cont. Air	2.36E+8 Ci	1.56E+8 Ci
	2.80E+4	10% NG, 5% HAL Released to Cont. Air	2.36E+7 Ci	1.56E+7 Ci
	2.80E+3	1% NG, .5% HAL Released to Cont. Air	2.36E+6 Ci	1.56E+6 Ci
	8.6E+3	100% GAP Released to Cont. Air	7.17E+6 Ci	6.26E+6 Ci
	8.6E+2	10% GAP Released to Cont. Air	7.17E+5 Ci	6.26E+5 Ci
	8.6E+1	1% GAP Released to Cont. Air	7.17E+4 Ci	6.26E+4 Ci
	1.0	1% Failed Fuel Primary Gas Release	1.43E+4 Ci	3.83E+2 Ci

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.22	POST ACCIDENT SAMPLING OF CONTAINMENT AIR (With No Attachments)	5
		PAGE 1 of 8

PURPOSE

Provide for monitoring during the collection of post accident containment air samples.

ENTRY CONDITIONS

Any one of the following:

1. Entry directed by the Radiological Assessment Director.

2. Entry directed by the Radiation Protection Supervisor.

Approvals on File

Effective Date 04/10/02

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

____ 1 INITIATE PROCEDURE:

- By: _____

  Date: _____

  Time: _____

NOTE: The minimum sampling team complement should consist of one Chemistry Team member and one Monitoring Team member at the Containment Air Sampling Panel (CASP) on the Auxiliary Building 27' level, and one Chemistry Team member at the Process Control Panel (PCP)/Containment Air Sampling Control Panel (CASCP) in Unit 1 Cable Spreading Room.

____ 2 REVIEW SYSTEM DESIGN BASIS:

- CASP design basis dose rates equal 30 mrem/hr at three feet
- Containment Air Sample design basis dose rates equal 8000 mrem/hr surface and 100 mrem/hr at one foot
- CASP is maintained at a negative pressure
- Dose rates and airborne contamination levels at the PCP/CASCP are not normally affected by the sampling process

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Protective measures should be considered for the individual operating the PCP/CASCP in the Unit 1 Cable Spreading Room.

____ 3 EVALUATE PROTECTIVE MEASURES:

a) Dosimetry:

- Head
- Trunk
- Gonad
- Leg

- Arm
- Wrist

b) Protective clothing:

- Full protective clothing
- Single gloves
- Tape all seams

c) Respiratory protection IAW general area conditions in the Auxiliary Building

d) Consider temporary shielding

e) Check anticipated exposure - EXCEEDS LIMITS

e) IF emergency exposure limits NOT exceeded, THEN GO TO Step 4.

f) Initiate EPIP-4.04, EMERGENCY PERSONNEL RADIATION EXPOSURE

____ 4 ASSIGN SAMPLE TEAM MEMBERS

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

____ 5 IDENTIFY INGRESS/EGRESS ROUTES:

a) Ask RPS about current plant conditions

b) Check radiation monitoring system for general area dose rates and vent exhaust capacity

c) Check recent airborne and general area surveys

d) Establish route

____ 6 GIVE BRIEFING TO SAMPLE TEAM:

a) Review this procedure

b) Review ingress/egress routes

c) Review sample volume requirements as determined by expected plant conditions

d) Review requirements for PCP/CASCP and the CASP:

- Stay times
- Protective clothing
- Dosimetry
- Respiratory equipment

- Monitoring

e) Review cautions:

- High radiation levels
- High activity samples
- Opening valves slowly

f) Give team a copy of this procedure

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
____ 7	NOTIFY RPS THAT SAMPLING TEAM IS READY FOR DISPATCH	
____ 8	ASK RPS FOR CURRENT PLANT STATUS	
____ 9	GIVE PLANT STATUS UPDATE TO TEAM	
____ 10	SEND OUT SAMPLE TEAM	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Chemistry Team members will use the High Radiation Sampling System - Containment Air Sampling Procedure to get a containment air sample. Performance of the following activities requires HP surveillance.

____ 11 MONITOR SAMPLING PROCESS:

a) Monitor set-up of Containment Air Sample Panel:

1) Check Chemistry Team member verifies negative pressure alarm - OPERABLE

2) Verify alarm - ON

2) GO TO Step 18

AND

Evaluate respiratory protection requirements.

3) WHEN Chemistry Team member closes rear door, THEN check alarm - OFF

3) GO TO Step 18

AND

Evaluate respiratory protection requirements.

b) Monitor sampling of Containment Air:

1) Chemistry team member will notify HP prior to entry into sampling mode

2) Prepare for containment air to enter CASP

3) Monitor dose rates on front of panel and on sample container

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
____ 12	PREPARE SAMPLE FOR TRANSPORT: a) Put glass bottle and syringe assembly in separate plastic bags b) Record the following information on sample containers (bags): • Sample identification • Unit number • Sample volume • Date • Time • Dose rate	
____ 13	CHECK SAMPLE CONTACT READING - LESS THAN 10 mrem/hr	IF sample contact reading GREATER THAN 10 mrem/hr, THEN ask HP to initiate EPIP-4.26, HIGH ACTIVITY SAMPLE ANALYSIS.
____ 14	TAKE SAMPLE TO COUNT ROOM: a) Use pre-planned route b) Monitor radiological conditions during transit c) Check dose rates along route within expected levels d) Maintain ALARA	c) Do the following: 1) Notify RPS. 2) Identify route of lowest dose field.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

____ 15 CALCULATE SAMPLE VOLUME:

a) Ask Chemistry for the number of aliquots of containment air taken

b) Calculate volume:

Aliquots x 0.1 cc = Volume

_____ x 0.1 cc = _____

c) Adjust calculation for containment pressure:

$$\frac{\text{Containment Pressure}}{14.7} \times \text{Volume} = \text{Corrected Volume}$$

$$\frac{\_\_\_\_\_}{14.7} \times \_\_\_\_\_ = \_\_\_\_\_$$

____ 16 HAVE SAMPLE ANALYZED

____ 17 NOTIFY RADIATION PROTECTION SUPERVISOR THAT SAMPLING IS COMPLETE

____ 18 TERMINATE EPIP-4.22:

- Give completed EPIP-4.22, forms and other applicable records to the Radiation Protection Supervisor
- Completed by: _____

Date: _____

Time: _____

-END-

VIRGINIA POWER
SURRY POWER STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.23	POST ACCIDENT SAMPLING OF REACTOR COOLANT (With No Attachments)	9
		PAGE 1 of 8

PURPOSE

To provide instructions for monitoring during the collection of a reactor coolant sample.

ENTRY CONDITIONS

Any of the following:

1. Entry directed by the Radiological Assessment Director (RAD).

2. Entry directed by the Radiation Protection Supervisor (RPS).

Approvals on File

Effective Date 04/10/02

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

____ 1 INITIATE PROCEDURE:

- By: _____

  Date: _____

  Time: _____

NOTE: Sampling teams should consist of one Chemistry Team member and one Monitoring Team member at the Liquid Sample Panel (LSP) in the Auxiliary Building, and one Chemistry Team member at the Process Control Panel (PCP) in the Unit 1 Cable Spreading Room.

____ 2 REVIEW SYSTEM DESIGN BASIS:

- Reactor coolant design basis dose rates:
  - 1000 rem/hr surface, undiluted
  - 1 rem/hr surface, diluted
  - 650 mrem/hr, undiluted, at the surface of the cask when the cover is NOT in place
- LSP design basis dose rates: 365 mrem/hr at three feet
- LSP is maintained at a negative pressure

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Protective measures should be considered for the individual at the PCP in the Unit 1 Cable Spreading Room.

____ 3 EVALUATE PROTECTIVE MEASURES:

a) Dosimetry for LSP:

- Head
- Trunk
- Gonad
- Leg

- Arm
- Wrist

b) Protective clothing for LSP:

- Full protective clothing
- Plastic suit
- Single gloves

c) Respiratory protection IAW general area conditions in the Auxiliary Building

d) Consider temporary shielding

e) Check anticipated exposure - EXCEEDS LIMITS

e) IF emergency exposure limits NOT exceeded, THEN GO TO Step 4.

f) Initiate EPIP-4.04, EMERGENCY PERSONNEL RADIATION EXPOSURE

____ 4 ASSIGN SAMPLING TEAM MEMBERS

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

____ 5 IDENTIFY INGRESS/EGRESS ROUTES:

a) Ask RPS about current plant conditions

b) Check radiation monitoring system for general area dose rates and vent exhaust activity

c) Check recent airborne and general area surveys

d) Establish routes

____ 6 GIVE BRIEFING TO SAMPLE TEAM:

a) Review sampling procedure

b) Review ingress/egress routes

c) Review requirements for the PCP and the LSP:

- Stay times
- Protective clothing
- Dosimetry
- Respiratory equipment

- HP monitoring

d) Review cautions:

- High radiation levels
- High sample activity levels
- High pressure sample
- Buddy system

- Open valves slowly

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

____ 7 CONSULT WITH RPS:

- Notify RPS that sample team is ready for dispatch
- Ask RPS about current plant status
- Have RPS notify RAD and Shift Supervisor (Operations) upon team dispatch

____ 8 GIVE PLANT STATUS UPDATE TO TEAM

____ 9 DISPATCH SAMPLE TEAM

NOTE: Chemistry Team members use Chemistry Procedures to obtain a liquid sample and to perform chemical analyses. The following sampling process, as directed by the Chemistry Procedure, requires HP surveillance.

____ 10 MONITOR SAMPLING PROCESS:

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	MONITOR SAMPLING PROCESS: (Continued)	
	a) Monitor set-up of the LSP	
	1) Check Chemistry Team member verifies negative pressure alarm - OPERABLE	
	2) Verify alarm - ON	2) GO TO Step 16 AND Evaluate respiratory protection requirements.
	3) Verify alarm - OFF	3) GO TO Step 16 AND Evaluate respiratory protection requirements.
	b) Establish initial purge to panel of liquid: • Have Chemistry Team member notify Monitoring Team prior to initiating purge	
	c) Chemistry analysis - PERFORMED • No sample taken	c) GO TO Step 10.d.
	d) Check stripped gas sample and hydrogen analysis: • 15 ml vial with 0.024 mls of reactor coolant off-gas	d) GO TO Step 10.e.
	e) Check diluted liquid sample: • 60 ml vial with 0.024 mls of liquid sample diluted with 24 mls of demineralized water (1:1000 dilution)	e) GO TO Step 10.f.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	MONITOR SAMPLING PROCESS: (Continued)	
	f) Undiluted sample - OBTAINED	f) GO TO Step 11.
	g) Monitor cask and cart as it is removed from the sample station	
	h) Get dose rate of cask and cart after auxiliary shield is installed	
____ 11	MONITOR LIQUID SAMPLE DILUTION:	
	a) Verify sample remains in shield cask	
	b) Verify diluter hole shield plug - REMOVED	
	c) Get dose rate (with plug removed)	
	d) Get dose rates from diluted sample	
____ 12	RECORD INFORMATION ON SAMPLE CONTAINER PRIOR TO TRANSPORT: • Date • Time • Sample identification • Unit number • Sample volume • Dose rates	
____ 13	ISOLATE AND FLUSH PANEL (IF REQUIRED): • Monitor Chemistry Team member activities while isolating and flushing panel	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
____ 14	TAKE SAMPLES TO COUNT ROOM:	
	a) Use pre-planned route	
	b) Monitor radiological conditions during transit	
	c) Check dose rates along route within expected levels	c) Do the following: 1) Notify RPS. 2) Identify route of lowest dose field.
	d) Maintain ALARA	
	e) Deliver samples	
____ 15	MAKE NOTIFICATIONS FOLLOWING SAMPLE DELIVERY: • RPS • RAD • Shift Supervisor (Operations)	
____ 16	TERMINATE EPIP-4.23: • Give completed EPIP-4.23, forms and other applicable records to the Radiation Protection Supervisor • Completed by: _____ Date: _____ Time: _____	

- END -