July 1, 1983

USNRC Washington (2 sets)

POINT BEACH NUCLEAR PLANT
EMERGENCY PLAN IMPLEMENTING PROCEDURES

The following revised procedures are attached and should be inserted into your manual. Please destroy all revisions removed from your manual.

1. EPIP 1.1, "Initial Classification," Revision 5, dated 07-01-83.

2. EPIP 1.2, "Plant Status," Revision 1, dated 07-01-83.

3. EPIP 1.3, "Estimation of Source Term," Revision 6, dated 07-01-83.

4. EPIP 1.7, "Evaluation of Core Damage," Revision 2, dated 07-01-83.

5. EPIP 1.8, "Emergency Off-Site Dose Estimations," Revision 3, dated 07-01-83.

6. EPIP 6.5, "Technical Support Center & Operations Support Center Activation," Revision 2, dated 07-01-83.

7. EPIP 7.3.2, "Post-Accident Sampling & Analysis of Potentially High Level Reactor Coolant," Revision 6, dated 07-01-83.

8. EPIP 7.3.3, "Post-Accident Sampling of Containment Atmosphere," Revision 5, dated 07-01-83.

9. EPIP 16.1, "Nuclear Engineering Section, Notification & Response," Revision 4, dated 07-01-83.

The following revised forms are attached for insertion into your manual. Please attach the form to the indicated procedure and destroy all revisions removed from your manual.

1. EPIP-05 (07-83), "Worksheet for Status Report on Radiation Monitoring System for Unit" (attach to EPIP 1.2).

2. EPIP-06 (07-83), "Worksheet for Status Report on Radiation Monitoring System for Plant" (attach to EPIP 1.2.).

3. EPIP-24a (05-83), Site Boundary Control Center Emergency Plan Inventory Checklist" (attach to EPIP 7.4.1).

4. EPIP-25c (05-83), "Quarterly Emergency Plan Checklist" (attach to EPIP 7.4.2).

5. EPIP-25d (05-83), "Semi-Annual & Annual Emergency Plan Checklist" (attach to EPIP 7.4.2).

6. EPIP-34 (07-83), "Calculation of Xe-133 Equivalent Release Rates" (attach to EPIP 1.8).

Also attached is a revised listing of the Table of Contents to be inserted into your manual. Please destroy the old revision.

Also attached is a revised Table of EPIP Forms. Please insert this table into your manual. Please destroy the old revision.

Please fill out the attached receipt form and return it to Ms. F. A. Flentje at the Point Beach Nuclear Plant.

J. E. Knorr

cmz

Attachments

USNRC Wash.

POINT BEACH NUCLEAR PLANT
EMERGENCY PLAN IMPLEMENTING PROCEDURES
JULY 1, 1983

I hereby acknowledge receipt of EPIP 1.1, EPIP 1.2, EPIP 1.3, EPIP 1.7, EPIP 1.8, EPIP 6.5, EPIP 7.3.2, EPIP 7.3.3 and EPIP 16.1, and have inserted them into my manual.

_____

Date _____

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INITIAL CLASSIFICATION

1.0 GENERAL

The purpose of this procedure is to provide a means of classifying an event or condition at the Point Beach Nuclear Plant into one of four emergency classifications as described in the Point Beach Nuclear Plant Emergency Plan. Each emergency classification requires emergency organization notifications, mobilizations, and actions to be performed in order to appropriately react to the situation and provide for the health and safety of plant and public personnel. They are listed in order of increasing severity.

1.1 Unusual Event

An unusual plant condition which either has occurred or might occur. This condition could possibly lead to a degradation in overall safety. This condition does not represent a significant radioactivity release, involves no offsite response, and may require no augmentation of plant personnel. In spite of the above, prompt notification of the counties and state is required.

1.2 Alert

Plant conditions in which events are in progress or have occurred which involve an actual or potential degradation of plant safety. Radiation releases are not likely to cause an offsite hazard. Prompt offsite notification is necessary and the plant organization may have to be augmented.

1.3 Site Emergency

Plant conditions in which events are in progress or have occurred which involve actual or probable major failures of plant functions. Potential radioactive releases may have an impact on offsite people. Prompt notification of offsite agencies is required. The plant organization must be augmented and the technical support center, onsite operations support center, and emergency support center will be operational. An evacuation may be necessary.

1.4 General Emergency

Plant conditions in which events are in progress or have occurred which involve actual or imminent substantial core degradation and a potential for loss of containment integrity. Potential radioactive releases may have an impact on offsite people. Prompt notification

of offsite agencies is required. The plant organization must be augmented and the technical support center, onsite operations support center, and emergency support center will be operational. An evacuation may be necessary. The emergency news center will be opened.

The Shift Supervisor has the responsibility and authority to take immediate action to mitigate the consequences of the emergency. He will consult with the Duty & Call Superintendent and assign the appropriate emergency classification and initiate the necessary Emergency Plan implementing procedures.

2.0 REFERENCES

2.1 Nuclear Regulatory Commission NUREG-0654, Revision 1, published November, 1980.

2.2 Point Beach Nuclear Plant Emergency Plan Sections 4.1 and 5.1.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 All actions and notifications should be appropriately logged.

3.2 Emergency Plan implementing procedures are not to be used to respond to security threats. One hour notification of the NRC is required using the red phone for security threats.

3.3 Certain events require notification to the NRC within one hour. These items are included on Table 1-1. Those items which are noted as "NRC Only" means that there is no classification for the events and no notification other than the NRC is required. These notifications are not considered as starting the Emergency Plan.

3.4 The "Indications Used" in Table 1-1 are those which one may expect if that level of emergency occurs very quickly. For more slowly developing situations, other indications may be judged appropriate. For example, a primary system leak rate of 40 gpm is an Unusual Event. Subsequently, charging may be lost and, in addition, the leak may worsen. One may not see charging flow 50 gpm greater than letdown flow when in fact an Alert should be declared.

3.5 For classification purposes where radiological dose is the primary parameter leading to a classification, use EPIP 1.8, "Emergency Off-Site Dose Estimation" for determination of dose.

4.0 INITIAL CONDITIONS

None.

NOTE: APPENDIX 1 OF NUREG-0654 (PAGE 1-3) CONTAINS THIS SENTENCE: "THE TIME IS MEASURED FROM THE TIME AT WHICH OPERATORS RECOGNIZE (EMPHASIS ADDED) THAT EVENTS HAVE OCCURRED WHICH MAKE DECLARATION OF THE EMERGENCY CLASS APPROPRIATE.

5.0 PROCEDURE

5.1 Call the Duty & Call Superintendent for consultation to establish the initial classification. If he is unavailable, the Shift Supervisor is responsible for classification.

5.2 Select affected categories related to plant events or conditions at this time. Check (√) all applicable categories.

Category				Refer to Page in Table 1-1
1.	_____	_____	_____ Safety System Functions	1
2.	_____	_____	_____ Abnormal Primary Leak Rate	1
3.	_____	_____	_____ Abnormal Coolant Temperature/ Pressure	2
4.	_____	_____	_____ Abnormal Primary/Secondary Leak	2
5.	_____	_____	_____ Core Fuel Damage	3
6.	_____	_____	_____ Secondary Coolant Anomaly	4
7.	_____	_____	_____ Abnormal Effluent	5
8.	_____	_____	_____ Major Electrical Failures	5
9.	_____	_____	_____ Control Room Evacuation	6
10.	_____	_____	_____ Fire	6
11.	_____	_____	_____ Plant Shutdown Function	7
12.	_____	_____	_____ Abnormal Radiation Levels at Site Boundary	8
13.	_____	_____	_____ Fuel Handling Accident	8
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15.	_____	_____	_____ Security Threat	9
16.	_____	_____	_____ Hazards to Plant Operations	9
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Category				Refer to Page in Table 1-1
19. _____	_____	_____	Load Transient	11
20. _____	_____	_____	Other	11

5.3 Beginning at the indicated page in Table 1-1 (attached), review initiating conditions for all categories checked above.

5.4 Record most severe emergency classification at this time.

_____ _____ _____

5.5 Record date/time of initial classification (subsequent columns for reclassification at a later date and time are provided if reclassification is required).

Initial Date/Time	Subsequent Date/Time	Subsequent Date/Time
_____	_____	_____

NOTE: IF THE SHIFT SUPERVISOR CANNOT COMMUNICATE WITH A DUTY & CALL SUPERINTENDENT, THE SHIFT SUPERVISOR MUST NOTIFY THE STATE AND TWO COUNTIES WITHIN 15 MINUTES OF THE DECLARATION OF ANY CLASS OF EMERGENCY.

5.6 If events or conditions are classified as an Unusual Event, perform EPIP 2.1, "Unusual Event - Immediate Actions."

5.7 If events or conditions are classified as an Alert, perform EPIP 3.1, "Alert - Immediate Actions."

5.8 If events or conditions are classified as a Site Emergency, perform EPIP 4.1, "Site Emergency - Immediate Actions."

5.9 If events or conditions are classified as a General Emergency, perform EPIP 5.1, "General Emergency - Immediate Actions."

NOTE:

"One hour" refers to the requirement to notify NRC within one hour (10 CFR 50.72).

"One hour - Open line" refers to the requirement to notify NRC within one hour and maintain an open line for continuous communication (10 CFR 50.72).

Notes: DCS - Duty & Call Superintendent
DSS - Duty Shift Supervisor
FSAR - Final Safety Analysis Report
MASP - Modified Amended PBNP Security Plan

TABLE 1-1

EMERGENCY CLASSIFICATION

Category	Initiating Condition	Indication Used	Emergency Classification
1. Safety System Functions	Unplanned initiation of emergency core cooling with injection to the primary system	Any of the following first-out reactor trip panel annunciation with indicator confirmation noted: 1. "Containment press hi", [PI-945, PI-947, PI-949 (2/3 >5 psig)] 2. "Steam line loop A lo-lo press" [PI-468, PI-469, PI-482 (2/3 <530 psig)] 3. "Steam line loop B lo-lo press" [PI-478, PI-479, PI-483 (2/3 <530 psig)] 4. "Pressurizer lo press SI" [PI-429, PI-430, PI-431 (2/3 <1735 psig)] 5. Wide range pressure <1500 psig	Unusual Event 1-Hour (7)
	Loss of containment integrity requiring shutdown by Technical Specifications	When shutdown commences as determined by DSS and DCS	Unusual Event 1-Hour (5)
	Loss of engineered safety feature requiring shutdown by Technical Specifications	When shutdown commences as determined by DSS and DCS	Unusual Event 1-Hour (5)
	Loss of fire protection system function requiring shutdown by Technical Specifications (i.e., both fire pumps inoperable) and no backup fire suppression system	When shutdown commences as determined by DSS and DCS	Unusual Event 1-Hour (5)
2. Abnormal Primary Leak Rate	Exceeding Technical Specification primary system leak rate (10 gpm)	When shutdown commences as determined by DSS and DCS	Unusual Event 1-Hour (5)

(5) (7) See DCS 1.12.1 for 10 CFR 50.72 Notifications.

Category	Initiating Condition	Indication Used	Emergency Classification
	Leak rate >50 gpm	All of the following: 1. "Volume control tank level hi-lo" [LI-141 and/or LI-112 <8%] 2. Decreasing pressurizer level [LI-426, LI-427, LI-428] 3. "Charging pump speed hi" 4. Charging line flow (FI-128) >50 gpm more than letdown flow (FI-134)	Alert
	Leak rate in excess of available pump capacity including charging, high head SI and low head SI	All of the following: 1. "Volume control tank level hi-lo [LI-141 and/or LI-112 <8%] 2. No pressurizer level indicated [LI-426, LI-427, LI-428] 3. All available pumps running as indicated by the red light at the switch 4. Increasing core exit T/C temp as indicated by P-250 and confirmed on local readout.	Site Emergency
3. Abnormal Coolant Temperature/Pressure	Unexpected decrease in subcooling margin	Both of the following: 1. Alarm on P-250, if operable 2. Confirmation by manual calculation	Unusual Event
	Pressure >2735 psig DNBR <1.30	Both of the following: 1. Pressure >2735 psig on PR-420, and 2. Code safety, or PORV not closed indication	NRC only 1-hour open line (2)
4. Abnormal Primary/ Secondary Leak	Exceeding Technical Specification primary-secondary leak rate	When shutdown commences as determined by DSS and DCS	Unusual Event 1-Hour (5)

(2) (5) See DCS 1.12.1 for 10 CFR 50.72 Notification.

Category	Initiating Condition	Indication Used	Emergency Classification
	Gross failure of 1 SG tube (>400 gpm) & loss of offsite power (FSAR 14.2.4)	All of the following first-out reactor panel annunciation with confirmation indication: 1. "Pressurizer Lo Press SI," [PI-429, PI-430, PI-431 (2/3 <1735 psig)] 2. a. "Steam generator A level hi" [LI-461, LI-462, LI-463 (2/3 >70%)] or b. "Steam generator B level hi" [LI-471, LI-472, LI-473 (2/3 >70%)] 3. a. "4.16 kv bus undervoltage" & 0 volts on A03 & A04 voltmeters. b. X04 to A03 ammeter on C02 (0 amps) c. X04 to A04 ammeter on C02 (0 amps) 4. SI flow >400 gpm indicated by FI-924 & FI-925 and pump discharge pressure corresponding to flow.	Alert
	Rapid failure of >10 SG tubes (4000 gpm) with or without offsite AC	All of the following first-out reactor panel annunciation with confirming indication: 1. "Pressurizer lo press SI" [PI-429, PI-430, PI-431 (2/3 <1735 psig)] 2. a. "Steam generator A level hi" [LI-461, LI-462, LI-463 (2/3 >70%)] or b. "Steam generator B level hi" [LI-471, LI-472, LI-473 (2/3 >70%)] 3. SI flow >4,000 gpm indicated by FI-626, FI-928, FI-924 & FI-925	Site Emergency
5. Core Fuel Damage	Gross fuel damage in core indicated	No. 1 & 3 or No. 2 & 3 of the following: 1. Letdown line radiation monitor (1R9) (sample line R109) 100 x alarm setpoint. 2. Failed fuel monitor (2RE-109) 100 x alarm setpoint. 3. Sustained offscale & chemical analysis shows fission product concentration increase by 100X.	Unusual Event

Category	Initiating Condition	Indication Used	Emergency Classification
	Massive fuel damage	300 µCi/cc iodine-equivalent as determined by by chemical analysis	Alert
	1. Massive loss of fuel clad integrity 2. With simultaneous loss of primary system integrity 3. With potential loss of containment integrity	Initiating Conditions Nos. 1, 2, 4 & 5 exist and No. 3 is possible: 1. 300 µCi/cc iodine-equivalent determined by chemical analysis 2. Primary system leak >1000 gpm indicated by SI flow >1000 gpm (FI-924 & FI-925) and pump discharge pressure corresponding to flow 3. Minimum containment pressure suppression equipment is not available (any of the following): a. No fan cooler operating and <2 spray pumps. b. No spray pump operating and <4 fan coolers c. <2 fan coolers running with 1 spray pump 4. "Containment press hi" [PI-945, PI-947, PI-949 (2/3 >5 psig)] 5. "Containment spray" with 2/3 + 2/3 >25 psig [PI-945, PI-947, PI-949] [PI-946, PI-948, PI-950]	General Emergency 1-Hour open line (3)
6. Secondary Coolant Anomaly	Reduction in feedwater enthalpy incident (FSAR 14.1.7)	1. a. Decreasing feedwater temp indicated by TO-418A & TO-438A on P-250 and b. confirmed by local temperature indicator on outlet of No. 5 feedwater heater. 2. Unexpected increasing power on excore nuclear instrumentation	Unusual Event
	Steam line break with primary to secondary leak rate in excess of 10 gpm (FSAR 14.2.5)	All of the following first-out reactor trip panel annunciation with confirmation: 1. Either: a. "Steam line loop A Lo-Lo press" [PI-468, PI-469, PI-482 (2/3 <530 psig)] or b. "Steam line loop B Lo-Lo press" [PI-478, PI-479, PI-483 (2/3 <530 psig)]	Alert 1-Hour open line (3)

(3) See DCS 1.12.1 for 10 CFR 60.72 Notification.

Category	Initiating Condition	Indication Used	Emergency Classification
		2. Confirmed primary-to-secondary leak rate of at least 10 gpm. 3. Either: a. "Steam line loop A isol channel alert" [FI-464, FI-465 (1/2 >3.9x10^6 lb/hr)] or b. "Steam line loop B isol channel alert" [FI-474, FI-475 (1/2 >3.9x10^6 lb/hr)]	
4. Secondary Coolant Anomaly	Transient initiated by loss of feedwater, followed by loss of auxiliary feedwater for >1 hour (FSAR 14.1.11)	All of the following: 1. Decreasing SG levels - "A" SG [LI-461, LI-462, LI-463] "B" SG [LI-471, LI-472, LI-473] 2. No auxiliary feedwater flow - [FI-4002, FI-4007, FI-4014] [FI-4036, FI-4037]	General Emergency 1-Hour open line (3)
7. Abnormal Effluent	Radiological effluent Technical Specification limits exceeded but <10 times the limit (FSAR 14.2.3)	Airborne effluents only	Unusual Event 1-Hour (8)
	Radiological effluent Technical Specification limits exceeded (FSAR 14.2.2)	Liquid effluents only	Unusual Event 1-Hour (8)
	Radiological effluents >10 times Technical Specification instantaneous limits. (An instantaneous rate which, if continued for >2 hours, would result in a dose of about 1 mR at the site boundary under average meteorological conditions.)	Airborne effluents only	Alert 1-Hour (8)
8. Major Electrical Failures	Sustained loss of offsite power >15 minutes (FSAR 14.1.2)	All of the following: 1. "4.16 kv bus undervoltage" & 0 volts on A03 & A04 voltmeters. 2. X04 to A03 ammeter on CO2 (0 amps). 3. X04 to A04 ammeter on CO2 (0 amps)	Unusual Event

(3) (8) See DCS 1.12.1 for 10 CFR 50.72 Notification.

Category	Initiating Condition	Indication Used	Emergency Classification
	Sustained loss of onsite AC power capability (>15 minutes)	Both of the following: 1. "4.16 kv bus undervoltage" & 0 volts on A05 and A06 voltmeters 2. "Emergency Diesel Starting System Disabled" for both Diesels	Unusual Event 1-Hour (5)
	Loss of all vital onsite DC power >15 minutes	Both of the following: 1. "Annunciator power failure" on C01, C02, C03, and C04 2. <100 volts on the voltmeters for all batteries	Site Emergency
	Loss of offsite power and loss of all onsite AC power for >15 minutes	All of the following: 1. "4.16 kv bus undervoltage" 0 volts on A03, A04, A05, A06 & "Emerg Diesel starting system disabled" for both Diesels 2. X04 to A03 ammeter on C02 (0 amps) 3. X04 to A04 ammeter on C02 (0 amps)	Site Emergency
	Loss of offsite and all onsite AC power with loss of all auxiliary feedwater for >2 hours	All of the following: 1. Unit aux MW meter X02 on C02 (0 MW) 2. Station aux MW meter X04 on C02 (0 MW) 3. X04 to A03 ammeter on C02 (0 amps) 4. X04 to A04 ammeter on C02 (0 amps) 6. X02 to A01 ammeter on C02 (0 amps) 7. a. No auxiliary feedwater flow [FI-4036, FI-4037] b. Decreasing SG level - "A" SG [LI-461, LI-462, LI-463] "B" SG [LI-471, LI-472, LI-473]	General Emergency
9. Control Room Evacuation	Evacuation of control room >15 minutes & no control at remote shutdown station	As required by DSS	Site Emergency 1-Hour open line (3)
10. Fire	Fire in vital area or on the controlled side of plant lasting >10 minutes after initial use of fire extinguishing equipment.	As reported by Fire Brigade Chief	Unusual Event

(3) (5) See DCS 1.12.1 for 10 CFR 50.72 Notification.

Category	Initiating Condition	Indication Used	Emergency Classification
	Fire affecting 1 train of safety systems.	As reported by Fire Brigade Chief	Alert
	Fire affecting 2 trains of safety systems	As reported by Fire Brigade Chief	Site Emergency
11. Plant Shutdown Function	Nonfunctional indications or alarms in the control room on primary system parameters requiring plant	Both of the following: 1. "Annunciator power failure" on C04. 2. Failed indication as determined by DSS.	Unusual Event 1-Hour (5)
	Turbine mechanical failure with consequences	All of the following: 1. Annunciator "Turbine supervisory." 2. Indication on TR-6019 of bearing vibration >7 mils. 3. Bearing vibration alarm on back of C03. 4. Visual confirmation of turbine housing penetration by a blade or disc.	Unusual Event
	Significant loss of effluent monitoring capability & meteorological instruments which impairs ability to perform emergency assessment. Loss of effluent monitoring may/may not require plant shutdown.	1. Loss of RE-223 during a release or 2. Loss of R18 (RE-218) during a release or 3. a. Loss of wind speed indication or wind direction indication and b. Loss of R14 and RMS II Channel 1 (RE-315, RE-317, RE-319) or c. Loss of R15 (RE-215) and CR9 and RMS II Channel 5 (RE-225, RE-226) or d. Loss of R21 (RE-221) and RMS II Channel 2 (RE-325, RE-327) or e. Loss of RE-224 and RMS II Channel 6	Unusual Event
	Failure of reactor protection system to complete a trip which brings reactor subcritical	All of the following: 1. Unplanned first out annunciator on C04 with confirmation from associated indicator 2. Intermediate range detector output not decaying 3. >1 RCC RPI indicates fully withdrawn	Alert 1-Hour open line (3)

(3) See DCS 1.12.1 for 10 CFR 50.72 Notification

Category	Initiating Condition	Indication Used	Emergency Classification
	All alarms (annunciators) lost >15 minutes while unit is not in cold shutdown	1. "Annunciator power failure" on C01, C02 & 1(2)C03, 1(2)C04	Alert
	Loss of functions needed for cold shutdown for >4 hours while at cold shutdown	Any of the following: 1. Loss of service water Unit 1 = south & west header Unit 2 = north & west header 2. Loss of both trains of RHR 3. Loss of component cooling	Alert
12. Abnormal Radiation Levels at Site	a. Effluent monitors detect levels corresponding to any of the following: (1) >50 mR/hr for ½ hour (2) >250 mR/hr for ½ hour for the thyroid (3) >500 mR/hr whole body for 2 minutes (4) >2500 mR/hr to the thyroid for 2 minutes at the site boundary for adverse meteorology	Airborne effluents only	Site Emergency
	b. Any of the above doses measured in the environs	As reported to DSS by HP Supervisor	
	c. Any of the dose rates projected, based on plant parameters		
	a. Effluent monitors detect levels corresponding to either: (1) 1 R/hr whole body (2) 5 R/hr thyroid at the site boundary under actual meteorological conditions	Airborne effluents only	General Emergency
	b. Either of the above doses measured in environs	As reported to DSS by HP Supervisor	
	c. Either of above dose rates projected based on other plant parameters		
13. Fuel Handling Accident	Major damage to irradiated fuel in containment	Both of the following: 1. As reported to DSS by Core Loading Supvr. 2. Alarm on Victoreen on manipulator & alarm on R211	Alert

Category	Initiating Condition	Indication Used	Emergency Classification
	Fuel damage accident with release of radioactivity to auxiliary building (FSAR 14.2.1)	Both of the following: 1. As reported to DSS by Supvr in charge of fuel handling & drumming area vent (R221) 2. Alarm on Victoreen on spent fuel pit bridge.	Alert
14. Serious or Fatal Injury	Transportation of seriously or fatally injured individual from site to hospital (Reference EPIP 11.1)	Reported as judged by DSS (expect hospitalization for at least 48 hours)	Unusual Event
15. Security Threat	Security threat or attempted sabotage or Ongoing security compromise	Per MASP	Per MASP & Appendices 1-Hour Red Phone Only (Open Line) (4)
16. Hazards to Plant Operation	Unusual aircraft activity over facility	Visual observation of Operations Supervisor or security force	Unusual Event
	Near or onsite explosion or flammable or toxic gas release	As reported to DSS by plant personnel making visual observation	Unusual Event
	Missile impacts from any source on facility	Visual observation by Operations Supervisor	Alert
	Missile impact causing damage to two trains of safety systems	Visual observation by Operations Supervisor	Site Emergency
	Aircraft crash in protected area (within the fence)	Visual observation by Operations Supervisor	Alert
	Known explosion damage to facility affecting plant operation. Toxic or flammable gases in facility environment excluding normal process gases	Visual observation by Operations Supervisor	Alert
	Toxic or flammable gases entering into vital areas (control room, auxiliary building, etc.) excluding normal process gases	Visual observation by Operations Supervisor	Site Emergency

(4) See DCS 1.12.1 for 10 CFR 50.72 Notification.

Category	Initiating Condition	Indication Used	Emergency Classification
17. Natural Events	Any earthquake	Activation of >2 accelerographs and verified by actual physical ground shaking or by contacting Dr. David Willis, University of Wisconsin, Milwaukee Seismic Center at 1-414/963-4602.	Unusual Event
	Any tornado visible from site	Verification by Operations Supervisor	Unusual Event
	Low Lake Michigan water level	With no CW pumps running, water level is 3.9' below 0' on surge chamber level & confirmed by measuring forebay level at 10.9' below pumphouse floor (7' level)	Unusual Event
	Earthquake greater than operating basis earthquake	Earthquake with attendant structural damage of containment or spent fuel pit	Alert
	Any tornado striking the facility	Visual observation by Operations Supervisor	Alert
	Seiche near design level	>6" of water in turbine hall	Alert
	Winds in excess of design levels	Wind speed indicated as >100 mph	Alert
	Wind with damage	Structural damage to containment	Site Emergency
	Failure of protection for vital equipment at low levels (i.e., caused by seiche > design levels)	Any of the following: 1. >3' water in both EDG rooms. 2. >2' water in vital switchgear room. 3. >2' water in auxiliary feed pump room.	Site Emergency
18. Reactivity Transient	Uncontrolled rod withdrawal (FSAR 14.1.1 & 14.1.2)		Unusual Event
	CVCS Malfunction (FSAR 14.1.5)		Unusual Event
	Accidental Criticality		NRC Only (3)

(3) See DCS 1.12.1 for 10 CFR 50.72 Notification.

Category	Initiating Condition	Indication Used	Emergency Classification
19. Load Transient	Loss of Electrical Load (FSAR 14.1.9)		Unusual Event
20. Other	Condition that warrants State and/or local official awareness	DCS & DSS concurrence	Unusual Event
	Condition that warrants establishment of technical support center & emergency support center	DCS & DSS concurrence	Alert
	Condition that warrants use of monitoring teams	DCS & DSS concurrence	Alert
	Personnel contamination	Health Physicist & DCS concurrence	NRC-only 1-hour (10)
	Any unplanned reactor trip	DCS & DSS concurrence	NRC-only 1-Hour (7)
	Strike by employees or guard force	DCS & DSS concurrence	NRC-only 1-Hour (12)
	Loss of red phone (ENS)	DCS & DSS concurrence	NRC-only 1-Hour (13)
	Personnel or procedural error	DCS & DSS concurrence	NRC-only 1-Hour (6)
	10 CFR 20.403	DCS & DSS concurrence	NRC-only 1-Hour (11)

(6) (7) (10) (11) (12) (13) See DCS 1.12.1 for 10 CFR 50.72 Notification.

PLANT STATUS

1.0 GENERAL

The purpose of this procedure is to provide a checklist of control room instrumentation and parameters for various plant systems to assist in the determination of the plant emergency status and conditions.

2.0 REFERENCES

2.1 U.S. NRC Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following An Accident," Revision 2, June 4, 1980.

3.0 PRECAUTIONS AND LIMITATIONS

None

4.0 INITIAL CONDITIONS

None

5.0 PROCEDURE

5.1 Shift Supervisor/Plant Operations Manager

5.1.1 Designate an individual, such as the Operating Supervisor or Control Room Operator, to perform Section 5.2 of this procedure.

5.1.2 Designate an individual, such as the Auxiliary Operator or Duty & Call Superintendent, to perform Section 5.3 of this procedure.

5.1.3 Review all completed attachments performed in Section 5.2 and 5.3 of this procedure to evaluate plant conditions as to status of the emergency and plant safety.

5.1.4 Determine if reclassification of the emergency is necessary (refer to EPIP 1.1, "Initial Classification") and notify respective plant supervisors and managers of significant problems associated with the plant.

5.1.5 Continue to assess and re-evaluate the plant conditions until plant conditions are stabilized to allow the termination or relaxation of the emergency.

5.2 Designee 1

5.2.1 Complete form EPIP-04 (attached) by evaluating and monitoring available control room instrumentation.

5.2.2 Forward the completed attachment to the Shift Supervisor. He will see that the information is forwarded to the Plant Operations Manager, technical support center, and emergency support center as soon as possible.

5.2.3 Continue to update form EPIP-04 by re-evaluating and monitoring appropriate control room instrumentation.

5.2.4 Relay updated and pertinent information and variables to the Shift Supervisor. He will see that the information is forwarded to the Plant Operations Manager, technical support center and emergency support center.

5.3 Designee 2

5.3.1 Complete forms EPIP-05 and EPIP-06 (attached) by evaluating and monitoring available readings from the radiation monitoring system in the control room or technical support center.

NOTE 1: IT SHOULD BE FULLY UNDERSTOOD THAT INDIRECT DETERMINATION OF DOSE RATES BASED UPON READINGS FROM THE INSTALLED AREA AND PROCESS MONITORS ARE ESTIMATES ONLY. THESE ESTIMATES SHOULD BE VERIFIED AND SUPPLEMENTED WHENEVER POSSIBLE BY DIRECT DOSE RATE SURVEYS AND AIR SAMPLING.

NOTE 2: ATTACHMENTS 1.2-1, 1.2-2 & 1.2-3 LISTINGS OF RMS INSTRUMENTS BY PLANT LOCATION, PROVIDES BASIC INFORMATION.

5.3.2 Forward the completed attachments to the Shift Supervisor. He will see that the information is forwarded to the Plant Operations Manager, technical support center and emergency support center as soon as possible.

5.3.3 Continue to update forms EPIP-05 and EPIP-06 by reevaluating and monitoring appropriate readings from the radiation monitoring system in the control room or technical support center.

5.3.4 Relay updated and pertinent information and variables to the Shift Supervisor. He will see that the information is forwarded to the Plant Operations Manager, technical support center and emergency support center.

ATTACHMENTS 1.2-1, 2 & 3

The purpose of these attachments is to provide guidelines to aid in evaluating in-plant radiation dose rate estimates and the potential for airborne activity using the installed RMS instrumentation.

Area monitors calibrated in mRem/hour provide direct indications of area radiation dose rates. Process type monitors calibrated in counts-per-minute may be used to estimate area dose rates by converting the readout in counts-per-minute to mRem/hour. The conversion factor is approximately one mRem/hour for each 1,000 cpm indicated.

Vent stack monitors which measure noble gas discharges from plant areas should always be considered to indicate potential airborne activity.

ATTACHMENT 1.2-1

LISTING OF RMS AREA MONITORS BY PLANT LOCATION

Monitor	Location	Indication
1R9 Letdown Line	Auxiliary building El. 26'. North end of demineralizer valve gallery.	Provides indication of reactor coolant activity. Indicates potential dose rate levels in the area of the volume control tanks, holdup tanks, letdown gas strippers, related piping, and No. 2/No. 3 pipeway lower level.
1R4 Charging Pump Hallway	Auxiliary building El. 8'. East side of charging pump hallway.	Indicates dose rates in the hallway east of the charging pump cubicles.
1R6 Primary Sample Room	Auxiliary building El. 26'. Inside of primary sample room.	Indicates dose rates inside sample rooms. Of minimal use unless sample system is in use.
1R22/2R22 Blowdown Tank	Facade El. 26' next to blowdown tank.	Provides dose rate indication around the blowdown tanks and facade El. 26'. The readout for these monitors is located on the blowdown evaporator control panel at C59 panel area.
R3 Chemistry Lab	Southeast corner of chemistry lab.	Provides indication of dose rates in the chemistry lab and associated hallways.
R5 Spent Fuel Pit	Northeast side of the spent fuel pit, El. 66' auxiliary building.	Provides indication of dose rates in the vicinity of the spent fuel pit. This monitor will be affected by high containment radiation levels.
R8 Drumming Area	Inside of Atcor waste processing cubicle.	Provides dose rates within the Atcor cubicle.

Attachment 1.2-1, Cont'd.

Monitor	Location	Indication
R1 Control Room	West side of control room.	Indicates dose rates in the area of control room.
1R2 Containment El. 66' Area Monitor	Located inside of containment on east side of El. 66' near hatch.	Provides dose rates within containment around east side of El. 66' near hatch.
1R7 Seal Table	Containment El. 46' by the seal table.	Provides dose rates in general area of seal table.
RE-101 Control Room	West wall of control room.	Shifts control room ventilation to 100% recirculation.
1(2)RE-102 Containment Low Range	El. 66' near access hatch on east side.	Provides dose rates within containment around access hatch.
RE-103 Chemistry Lab	East wall of chemistry lab near counting room door.	Provides indication of dose rates in chemistry lab and associated hallways.
1(2)RE-104 Charging Pump Room Low Range	Mounted on west side of shield wall east of cubicles on El. 8' of aux. building.	Indicates dose rates in hallways east of charging pump cubicles.
RE-105 Spent Fuel Pit Low Range	Mounted on railing just northeast of spent fuel pit on El. 66' of aux. building.	Provides indication of dose rates in the vicinity of the spent fuel pit. This monitor is affected by high radiation levels in containment.
1(2)RE-106 Primary Side Sample Room Low Range	Mounted on west wall, towards north corner of sample room on El. 26' of aux. building.	When sampling system is in operation, it indicates dose rate inside sample room.
1(2)RE-107 Seal Table	Mounted on wall just above seal table on El. 46' of containment.	Provides an indication of general area dose rate near seal table.

Attachment 1.2-1, Cont'd.

Monitor	Location	Indication
RE-108 Drumming Station	Mounted inside the Atcor waste processing cubicle.	Provides dose rate indication within the drumming station.
1(2)RE-109 Failed Fuel	Mounted on south wall near east corner of primary side sample room on El. 26' of aux. building.	Provides an indication of failed fuel by monitoring the primary coolant sample activity.
RE-110 SI Pump Room	Located on north wall just west of passageway in SI pump room.	Provides an indication of the dose rate in general area of SI pumps.
RE-111 C59 Panel	Mounted on top of C59 instrument panel on El. 26' of aux. building.	Provides general area dose rate near C59 panel.
RE-112 Central PAB	Mounted on north wall just east of pipeway No. 3 on El. 8' of aux. building.	Indicates general area dose rate on El. 8' of aux. building.
RE-113 El. -19' Auxiliary Building	Mounted in general area of El. -19' of aux. building.	Provides an indication of the dose rate in aux. building sump and general area of El. -19'.
RE-116 Valve Gallery	Mounted by north entrance to valve gallery on El. 26' of aux. building.	Indicates general area dose rate in letdown valve gallery.
1(2)RE-134 Charging Pump Room High Range	Mounted next to 1(2)RE-104 on west side of shield wall, east of cubicles on El. 8' of aux. building.	Provides an indication of general area dose rates in the event low-range monitor pegs offscale high.
RE-135 Spent Fuel Pit High Range	Mounted next to 1(2)RE-105 on railing just northeast of spent fuel pit on El. 66' of aux. building.	Provides an indication of general area dose rates in the event low-range monitor pegs offscale high.
1(2)RE-136 Primary Side Sample Room High Range	Mounted next to 1(2)RE-106 on west wall, towards north corner of sample room on El. 26' of aux. building.	Provides an indication of general area dose rates in the event low-range monitor pegs offscale high.

Attachment 1.2-1, Cont'd.

Monitor	Location	Indication
RE-140 SI Pump Room High Range	Mounted next to RE-110 on north wall just west of passageway in SI pump room.	Provides an indication of general area dose rates in the event low-range monitor pegs offscale high.

ATTACHMENT 1.2-2

LISTING OF RMS PROCESS MONITORS BY PLANT LOCATION

Monitor	Location	Indication
1R16 Containment Fan Cooler Liquid Monitor	Central section of aux. building, El. 26'.	Provides indication of possible contamination of service water from the containment cooling fans. May be used to estimate dose rates in the central section of the aux. building.
1R19 Steam Generator Blowdown Monitors	Outside of each primary sample room, aux. building El. 26'.	Provides indication of steam generator blowdown activity. May be used to estimate dose rates in vicinity of the monitor and aux. building El. 26' hallways.
1R17 Component Cooling Liquid Monitor	East side of aux. building central section, El. 8'.	Provides indication of component cooling system liquid activity. May be used to estimate dose rates in the vicinity of the monitors. May also be an indication of dose rates around the component cooling tanks and heat exchangers on aux. building El. 46'.
R18 Waste Condensate Overboard Monitor	Aux. building El. 8', east side, near component cooling water pumps.	Monitors activity levels of waste water being discharged overboard. May be used to estimate dose rates in the central section of aux. building El. 8'.
R20 Spent Fuel Pit Heat Exchanger Service Water Out Monitor	Aux. building El. 46', north side.	Indicates activity of service water from the spent fuel pit heat exchangers. May be used to estimate dose rates in vicinity of the Unit 2 facade. Due to location and shielding, this monitor should not be used to estimate dose rates originating from Unit 1 containment.

Attachment 1.2-2, Cont'd.

Monitor	Location	Indication
1R11 Containment & Purge Stack Particulate Monitor	Facade, El. 52', east side.	Indicates particulate activity in containment and purge stack. May be used to indicate dose rates in facade, containment purge fans and purge stack.
1R12 Containment & Purge Stack Gas Monitor	Facade, El. 52', east side.	Indicates gaseous activity in containment and purge stack. May be used to indicate dose rates in facade containment purge fans and purge stack.

The following process monitors may be used in evaluating potential airborne contamination levels within the plant. Whenever there are indications of high airborne activity being discharged through a vent stack, there is always the possibility of in-plant airborne contamination.

R14 Aux. Building Vent Stack	In aux. building vent stack, Unit 1 facade, just south of elevator.	Indicates gaseous releases from within the aux. building. May indicate potential aux. building airborne activity.
R21 Drumming Area Vent Stack	Northwest corner of Unit 1 facade near roof.	Indicates gaseous releases from spent fuel pit area and drumming station. Indicative of potential aux. building airborne activity.
1R15/2R15 Steam Air Ejector Monitor	West side of turbine building El. 46'.	Indicative of steam generator primary-to-secondary leakage. May be indicative of potential radiation exposure sources within turbine building.
1(2)RE-211 Containment Air Particulate	Located in cubicle on east side of El. 52' of containment facade.	Indicates particulate activity inside containment, facade, or purge exhaust stack. There are no control functions associated with this monitor.
1(2)RE-211B Containment Background	Located next to 1(2)RE-211 in cubicle.	Provides background activity for both 1(2)RE-211 and 1(2)RE-212 for background subtraction, if used.

Attachment 1.2-2, Cont'd.

Monitor	Location	Indication
1(2)RE-212 Containment Noble Gas	Located in series with 1(2)RE-211 on detector skid in the cubicle on El. 52' of containment facade.	Provides indication of containment noble gas activity. Isolates containment ventilation upon high activity.
RE-214 Aux. Building Vent Stack Noble Gas	Mounted on aux. building exhaust stack at about El. 80' in Unit 1 facade just south of elevator.	Indicates any gaseous release from spent fuel pit area and the drumming station. Indicative of potential aux. building airborne activity. Shuts the vent gas release valve and initiates aux. building exhaust filtration.
1(2)RE-215 Condenser Air Ejector Noble Gas	Mounted on west wall of El. 46' in turbine hall between MSR's.	Indicative of steam generator primary-to-secondary leak. May be indicative of a potential airborne radiation exposure in turbine hall.
1(2)RE-216 Containment Fan Coolers Liquid Process	In Unit 1, located west and slightly south of C59 panel. In Unit 2, located west and slightly north of C59 panel.	Provides indication of potential contamination of cooling water.
1(2)RE-216B Containment Fan Coolers Background	Located next to 1(2)RE-216 monitor.	Provides background data for the 1(2)RE-216 liquid process monitor, if used.
1(2)RE-217 Component Cooling Water Liquid Process	In Unit 1, located in overhead just north of stairs going from El. 8' of aux. building to C59 panel area. In Unit 2, located in overhead just west of Unit 2 component cooling water pumps.	Provides indication of component cooling water contamination. Shuts component cooling water surge tank vent.
RE-218 Waste Disposal System Liquid Process	Located on east wall of waste condensate cubicle across from component cooling water pump on El. 8' of aux. building.	Monitors waste condensate activity being discharged. Upon exceeding high level setpoint, discharge of waste condensate is secured.

Attachment 1.2-2, Cont'd.

Monitor	Location	Indication
RE-218B Waste Disposal System Background	Located next to RE-218 monitor.	Provides background activity level for RE-218 liquid process monitor, if used.
1(2)RE-219 Steam Generator Blowdown Liquid Process	Located outside each primary side sample room on El. 26' of aux. building.	Provides an indication of steam generator blowdown activity. Secures steam genrator blowdown and blowdown tank outlet valves, and steam generator sample valves.
1(2)RE-219B Steam Generator Blowdown Background	Located next to 1(2)RE-219 monitor.	Provides background activity level for 1(2)RE-219 liquid process monitor, if used.
RE-220 Spent Fuel Pit Heat Exchanger Service Water Liquid Process	Located on El. 46' of aux. building on north wall just west of door to Unit 2 containment facade.	Provides an indication of service water contamination from a spent fuel pit heat exchanger tube leak.
RE-220B Spent Fuel Pit Heat Exchanger Service Water Background	Located next to RE-220 monitor.	Provides background activity level for RE-220 liquid process monitor, if used.
RE-221 Drumming Area Vent Stack Noble Gas	Located in exhaust ducting above drumming area SPING in northwest corner of Unit 1 facade.	Indicates noble gas activity released from spent fuel pit and drumming area. May be indicative of a potential aux. building airborne release.
1(2)RE-222 Steam Generator Blowdown Tank Outlet Liquid Process	Located on El. 26' of aux. building on east side of steam generator blowdown tank.	Provides an indication of activity level in blowdown tank. Secures blowdown of steam generators and closes blowdown tank outlet valves.
RE-223 Waste Distillate Discharge Liquid Process	Mounted on east side of "C" component cooling water heat exchanger on El. 46' of aux. building.	Monitors activity of waste distillate during discharge. Secures discharge valves upon exceeding setpoint.
RE-223B Waste Distillate Discharge Background	Located next to RE-223 monitor.	Provides background activity level for RE-223 liquid process monitor, if used.

Attachment 1.2-2, Cont'd.

Monitor	Location	Indication
RE-224 Gas Stripper Vent Stack Noble Gas	Located in northeast corner of Unit 2, El. 26' containment facade by exhaust duct.	Indicates activity of gaseous release from letdown gas stripper building.
RE-225 Combined Air Ejector Low-Range Noble Gas	Located above door on El. 46' of turbine hall leading to I&C office.	Indicative of primary-to-secondary leak in steam generators.
RE-226 Combined Air Ejector Low-Range Noble Gas	Located adjacent to RE-225 low-range noble gas monitor.	Provides an indication of the noble gas activity in combined air ejector discharge in the event RE-225 monitor is pegged off-scale high.
1(2)RE-229 Service Water Discharge Process	For Unit 1, located on El. 8' of aux. building in vent area. For Unit 2, located in aux. feed pump room on east side of tunnel.	Monitors activity of service water discharge.
1(2)RE-229B Service Water Discharge Background	Located adjacent to 1(2)RE-229 liquid process monitor.	Provides background activity level for the 1(2)RE-229 monitor, if used.
RE-230 Retention Pond Discharge Liquid Process	Located on El. 8' of turbine hall outside entrance to water treatment.	Monitors activity level in retention pond effluent.
RE-230B Retention Pond Discharge Background	Located adjacent to RE-230 liquid process monitor.	Provides background activity level for RE-230 liquid monitor.
1(2)RE-231 - Line "A" 1(2)RE-232 - Line "B" Steam Line Atmospheric Release	Located on El. 88' of containment facade in the area of atmospheric relief valves - one per steam generator.	Monitors activity of steam released.
RE-234 Control Room Iodines	Located on top of control room building on El. 46' of turbine hall.	Monitors iodine activity in control room. Initiates 100% recirculation (Mode 4) of control room ventilation upon exceeding setpoint.

Attachment 1.2-2, Cont'd.

Monitor	Location	Indication
RE-234B Control Room Background	Located adjacent to RE-234 iodine monitor.	Provides background activity level for RE-234 iodine monitor.
RE-235 Control Room Noble Gas	Located adjacent to RE-234 iodine monitor.	Monitors noble gas activity in control room. Initiates 100% recirculation (Mode 4) of control room ventilation upon exceeding setpoint.
RE-237 Technical Support Center Iodines	Located in ductwork on El. 18.5' of TSC building, in northwest corner.	Monitors iodine activity in the TSC air duct.
RE-237B Technical Support Center Background	Located adjacent to RE-237 iodine monitor.	Provides background activity for RE-237 monitor.
RE-238 Technical Support Center Noble Gas	Located adjacent to RE-237 iodine monitor.	Monitors the noble gas activity in TSC air duct.

ATTACHMENT 1.2-3

LISTING OF HIGH-RANGE RMS-II PROCESS MONITORS BY PLANT LOCATION

NOTE: THE RMS-II PROCESS MONITORS ARE HIGH-RANGE INSTRUMENTS CALIBRATED TO READOUT IN MREM/HOUR OR REM/HOUR. THEY ARE OFF-LINE TYPE MONITORS AND DO NOT DIRECTLY INDICATE VENT STACK DOSE RATE LEVELS. SHIELDING PREVENTS THEM FROM BEING USED AS AN INDICATION OF LOCAL DOSE RATES NOT ORIGINATING WITHIN THE PROCESS SYSTEM BEING MONITORED.

Monitor	Location	Indication
RMS-II, Ch. 1/Aux. Building Vent Stack	Unit 1 facade, El. 66'.	Provides a means of assessing high level releases from the aux. building. Any indication on this monitor indicates a potential for high airborne activity and high radiation dose rates within the aux. building.
RMS-II, Ch. 2/Drumming Area Vent Stack	Unit 1 facade, El. 6.5', west side.	Provides a means of assessing high level releases from the central section (El. 46' & El. 66') of aux. building, spent fuel pit and drumming area. Any indication on this monitor indicates a potential for high airborne activity and high radiation dose rates in the above areas.
RMS-II, Ch. 3 & 4/Containment Purge Stack	Unit 1: Unit 1 containment El. 66' entrance hatch platform. Unit 2: On top of Unit 2 R11/12 cubicle.	Provides a means of assessing high level releases from containment. Any indication on this monitor indicates a potential for high airborne activity and high radiation dose rates in aux. building and in area of purge fans and stacks.
RMS-II, Ch. 5/Combined Air Ejector Duct	Above CR9 monitor on west wall of Unit 1 turbine hall, El. 46'.	Provides a means of assessing high level releases from the steam air ejector. Any indication on this monitor indicates a potential for high air ejector airborne activity or high radiation dose rates throughout the turbine building.

Attachment 1.2-3, Cont'd.

Monitor	Location	Indication
RMS-II, Ch. 6/Gas Stripper Building Vent Stack	Unit 2, El. 66' fanroom, north side.	Provides a means of assessing high level releases from the gas stripper buildings. Any indication on this monitor indicates a potential for high airborne activity within the gas stripper or high radiation dose rate levels in the vicinity of the letdown gas strippers and related aux. building areas on El. 46' and El. 26'.

ESTIMATION OF SOURCE TERM

1.0 GENERAL

The purpose of this procedure is to estimate the source term (stack release rate in Ci/second) using the low range operational stack monitors, the Eberline RMS II Radiation Monitoring Systems or direct contact radiation measurements on the plant effluent vents. The plant effluent vent stacks are:

1.1 Auxiliary Building Vent, R14 (ABVNT)

1.2 Drumming Area Vent, R21 (DAVNT)

1.3 Gas Stripper Building Vent, RE-224 (GSBVNT)

1.4 Unit 1 Containment Purge, 1RE-305

1.5 Unit 2 Containment Purge, 2RE-305

1.6 Combined Air Ejector Decay Duct, RE-225 (CAE)

1.7 Main Steam Safety Valves and Atmospheric Dump Valves, 1(2)RE-231 and 1(2)RE-232

2.0 REFERENCE

2.1 EDS Report to Wisconsin Electric Power Company concerning NUREG-0578, March 7, 1980.

3.0 PRECAUTIONS

3.1 If fuel damage or loss of reactor coolant system integrity has occurred, some or all of the following would be present:

3.1.1 The letdown radiation monitor (1R9) or the failed fuel radiation monitor (2RE-109) may be unusually high or offscale.

3.1.2 The containment radiation monitors (1R11 and 1R12 or 2RE-211 and 2RE-212) may be unusually high or offscale.

3.1.3 The containment area monitors (1R2 and 1R7 or 2RE-102 and 2RE-107) may be unusually high or offscale.

3.1.4 The charging pump area monitor (1R4 or 2RE-104) may be unusually high or offscale.

3.2 Health physics procedures and requirements must be followed when applicable (i.e., entering a high radiation area).

3.3 Evaluation of the radiation monitoring system readouts and radiological hazards must be completed prior to any attempt to enter the auxiliary building or facade to take a contact reading on any stack.

3.4 If this procedure is being used for determination of emergency classification, use EPIP 1.8 "Emergency Off-Site Dose Estimations" for determination of projected dose off-site. EPIP 1.8 is a shorter, however more conservative procedure for determination of projected dose.

4.0 INITIAL CONDITIONS

4.1 Applicable portions of EPIP 1.2, "Plant Status", is completed.

5.0 PROCEDURE FOR Xe-133 EQUIVALENT RELEASE RATE ESTIMATE - WORKSHEET NO. 1

5.1 Chemistry/Health Physics Supervisor or Designated Alternate

5.1.1 Obtain EPIP-05 and EPIP-06 of EPIP 1.2, "Plant Status," for the radiation monitoring systems.

NOTE: IF EPIP-05 AND EPIP-06 IN EPIP 1.2, "PLANT STATUS," ARE NOT COMPLETED, OBTAIN THE METER READINGS FOR EACH PLANT EFFLUENT VENT STACK FROM THE REMOTE CONTROL ROOM READOUT AND RECORD THIS ON WORKSHEET NO. 1 AND THEN PROCEED WITH STEP 5.1.3.

NOTE: PLANT EFFLUENT VENT STACK MONITOR READINGS ARE ALSO AVAILABLE FROM THE TECHNICAL SUPPORT CENTER DATA LOGGER. SEE ATTACHMENTS 1.3-1, 2 & 3.

5.1.2 Enter the meter readings in the appropriate column on Worksheet No. 1 for the indicated vents. If the readings are offscale, not monitored, or the monitors are inoperable, enter the appropriate word "offscale," "not monitored," or "inoperable" in the meter reading column for the vent affected.

5.1.3 Designate individuals in accordance with ALARA concepts to obtain meter readings of the vents whose Eberline RMS monitor readings are unavailable by performing Section 5.2 of this procedure, if required.

NOTE: IF STEP 5.1.3 NEEDS TO BE COMPLETED BECAUSE EBERLINE RMS MONITOR READINGS ARE UNAVAILABLE, THEN PERFORM SECTION 5.3 OF THIS PROCEDURE AFTER APPROPRIATE MEASUREMENTS HAVE BEEN TAKEN IN SECTION 5.2.

5.1.4 Perform Section 5.3 of this procedure to determine the estimated Xe-133 equivalent release rate.

5.2 Direct Stack Survey Team Designees

NOTE: THE FOLLOWING SECTION WILL NOT BE INITIATED UNTIL THE EVALUATION DISCUSSED IN PRECAUTION 3.3 HAS BEEN COMPLETED AND THE SITE MANAGER (DUTY & CALL SUPERINTENDENT), THE DUTY & CALL HEALTH PHYSICS SUPERVISOR, AND THE DUTY SHIFT SUPERVISOR HAVE APPROVED INITIATION. THIS SECTION WILL BE ACCOMPLISHED UNDER THE DIRECTION OF HEALTH PHYSICS SUPERVISION.

5.2.1 Determine the most direct and desirable route to the plant effluent stack to be monitored.

5.2.2 Determine the Health Physics requirements to be met for the passage to the vent areas.

5.2.3 Determine the appropriate survey instrument to be used for the plant effluent vent to be monitored.

5.2.4 Proceed by the route determined in Step 5.2.1 to the stack and record the survey instrument reading in contact with the stack in the columns provided on Worksheet No. 1, Part C, Plant Effluent Vent Stack Contact Readings.

NOTE: IN THE CASE OF THE MAIN STEAM SAFETY VALVES AND ATMOSPHERIC STEAM DUMP VALVES, THE READING WILL BE TAKEN IN CONTACT WITH THE CENTERLINE OF THE MAIN STEAM HEADER, THREE FEET FROM THE MAIN STEAM LINE. SHIELD THE PROBE (WITH A MINIMUM OF .25 INCHES OF LEAD) ON THE SIDES FACING THE MAIN STEAM LINE AND THE CONTAINMENT.

5.3 Chemistry/Health Physics Supervisor or Designated Alternate

5.3.1 Choose the appropriate vent stack readouts in Part A, B, or C of Worksheet No. 1 to convert readings to a Xe-133 equivalent release rate. That is if the low range monitors go offscale, use the high range monitors. Conversely, if the normal monitors are onscale, use the normal monitors, or if both normal and high range monitors are offscale or inoperable, use the vent stack contact readings.

5.3.2 Use the appropriate conversion factors for each of the plant effluent vent to convert the chosen vent stack readout, (cpm, μCi/cc or R/hour) from Step 5.3.1 to an Xe-133 equivalent release rate in Curies/second and record the value on Worksheet No. 1, Part F, Estimate of Gross Xe-133 Equivalent Release Rate. Enter the appropriate word "offscale," "not monitored," or "inoperable" for the cases where the plant effluent vent was not monitored, offscale, or inoperable.

NOTE: THE FOLLOWING QUALIFYING NOTES MUST BE RECOGNIZED.

1. If the actual flow rate is different than the assumed conversion factor flow rate, a ratio of:

$$\frac{\text{Actual Flow Rate}}{\text{Assumed Flow Rate}}$$

should be applied to determine the release rate.

(Ratio) x Release Rate Value = Adjusted Xe-133 Release Rate

2. Determine the steam line atmospheric vent, or the main steam header vent release rate in accordance with the following:

   a. Obtain from the Shift Supervisor an estimated flow rate through the main steam header in lbm/hour of steam being dumped to the environment and the specific volume (v) of the steam.

      NOTE: AT 1000 PSIA, SPECIFIC VOLUME IS 0.446 FT^3/LBM. AT 500 PSIA, SPECIFIC VOLUME IS 0.928 FT^3/LBM.

      _____ lbm/hr x v $\frac{ft.^3}{lbm}$ x 7.86 $\frac{cc}{ft.^3}$ $\frac{hr.}{sec.}$

   b. Convert contact reading, if required, the main steam header to µCi/cc using the appropriate conversion factor (Worksheet No. 1 Sect. C).

      _____ µCi/cc

   c. Multiply flow rate obtained in Step (a) by the concentration obtained in Step (b) to obtain the release rate (Xe-133 equivalent) from the main steam header.

      Flow Rate (cc/sec.) x Concentration (µCi/cc) = Main Steam Header Release Rate

5.3.2 Sum the values (1) through (5) on Worksheet No. 1, Part F, or use grab sample results #7 on Worksheet No. 1, Part F, to determine the gross Xe-133 equivalent release rate.

NOTE: IF GRAB SAMPLE RESULTS ARE AVAILABLE, THE RESULT OF SUCH SAMPLES SHOULD BE MORE ACCURATE THAN GROSS MONITOR READINGS AND HENCE SHOULD BE USED IN LIEU OF THE RELEASE RATES CALCULATED ABOVE OR IN ADDITION TO THE ABOVE IF THE RELEASE IS FROM AN UNMONITORED RELEASE PATH.

5.3.3 Report the calculated gross Xe-133 equivalent release rate to the Shift Supervisor and the Technical Support Manager.

WORKSHEET NO. 1

Xe-133 EQUIVALENT RELEASE RATE

A. OPERATIONAL LOW-RANGE RELEASE MONITORS READOUTS

	Meter Reading	Flow Rate (cfm)	Conversion Factor	Xe-133 Equiv. Release Rate Ci/sec
Auxiliary Building Vent	_____R/hr	61400	5.8×10^{-9}	_____
Drumming Area Vent	_____R/hr	43100	1.3×10^{-8}	_____
U1 Containment Purge, 1 fan	_____cpm	12500	2.1×10^{-6}	_____
2 fans	_____cpm	25000	4.2×10^{-6}	_____
U2 Containment Purge, 1 fan	_____cpm	12500	2.1×10^{-6}	_____
2 fans	_____cpm	25000	4.2×10^{-6}	_____
Gas Stripper Building Vent	_____µCi/cc	13000	6.2	_____
Combined Air Ejector	_____µCi/cc	25	1.6×10^{-2}	_____
Steam Line Atmospheric Vent	_____µCi/cc	Refer to Section "E"		

B. EBERLINE RMS - II VENT STACK READOUTS

NOTE: THESE READINGS ARE ALSO AVAILABLE ON THE TECHNICAL SUPPORT CENTER DATA LOGGER. ATTACHMENTS 1.3-1, 2, 3.

	Meter Reading (R/hour)	Flow Rate (cfm)	Conversion Factor	Xe-133 Equiv. Release Rate Ci/sec
Aux. Building Vent, Ch. #1	_____	61400	3.0×10^{3}	_____
Drumming Area Vent, Ch. #2	_____	43100	2.1×10^{3}	_____
U2 Containment Purge	_____	12500	1.6×10^{4}	_____
	_____	25000	3.2×10^{4}	_____
U1 Containment Purge	_____	12500	1.6×10^{4}	_____
	_____	25000	3.2×10^{4}	_____
GS Bldg. Vent, Ch. #6	_____	13000	6.2×10^{2}	_____
Combined Air Ejector Decay, Ch. #5	_____	25	3.4	_____

C. PLANT EFFLUENT VENT STACK CONTACT READINGS

Vent	Meter Reading (R/hr)	Flow Rate (cfm)	Conversion Factor	Xe-133 Equiv. Release Rate Ci/sec
Auxiliary Building	_____	61400	300	_____
Drumming Area	_____	43100	2.3×10^{2}	_____
U1 Containment Purge	_____	12500	8.0×10^{1}	_____
	_____	25000	1.6×10^{2}	_____
U2 Containment Purge	_____	12500	8.0×10^{1}	_____
	_____	25000	1.6×10^{2}	_____
Gas Stripper Building	_____	13000	8×10^{4}	_____
Combined Air Ejector Decay	_____	25	1.6×10^{2}	_____
Main Steam Header	_____	Refer to Section "E"		

D. ACTUAL VERSUS CONVERSION CURVE FLOW RATE RATIO

Actual Flow Rate / Assumed Flow Rate x Release Rate Value = Adjusted Releast Rate

(_____ / _____) x _____ = _____

E. STEAM HEADER XE-133 EQUIVALENT RELEASE RATE CALCULATION

1. lbm/hr x specific volume, ft^3/lbm x 7.86 cc-hr/ft^3-sec

NOTE: At 1000 psia specific volume = .446 ft^3/lbm
At 500 psia specific volume = .928 ft^3/lbm

_____ lbm/hr x _____ ft^3/lbm x 7.86 cc-hr/ft^3-sec

= _____ cc/sec

2. Contact reading from Section C (if contact reading used):

_____ R/hr = _____ µCi/cc

3. Steam header release rate:

Flow rate cc/sec x Concentration μCi/cc = Release Rate

_____ cc/sec x _____ x 10^{-6} Ci/cc = _____ Ci/sec
Step E.1 Step A.7 or E.2

F. ESTIMATE OF GROSS Xe-133 EQUIVALENT RELEASE RATE

Vent	Xe-133 Equivalent Release Rate (Curies/Sec.)
1. Auxiliary Building	
2. Drumming Area	
3. Gas Stripper Building	
4. Combined Air Ejector Decay Duct	
5. Main Steam Header	
6. Unit 1 Containment Purge	
7. Unit 2 Containment Purge	

8. Sum _____ (Gross Xe-133 Equiv. Release Rate)

OR

9. Grab Sample Results = _____ Ci/sec.

Completed By _____ Time _____
Date _____

DRUMMING AREA VENT STACK RMS-II CH #2 &
COMBINED AIR EJECTOR DISCHARGE RMS-II CH #5

VOLTAGE TO R/HR CONVERSION TABLE

RANGE 1 to 10^4 R/HR

Volts	Units R/hr
0	0.001
0.1	0.00135
0.2	0.001847
0.3	0.002511
0.4	0.003414
0.5	0.004641
0.6	0.006309
0.7	0.008576
0.8	0.011659
0.9	0.015848
1.0	0.021544
1.1	0.029286
1.2	0.039810
1.3	0.054116
1.4	0.073564
1.5	0.100
1.6	0.135935
1.7	0.184784
1.8	0.251188
1.9	0.341454
2.0	0.464158
2.1	0.630957
2.2	0.857695
2.3	1.165914
2.4	1.584893
2.5	2.154434
2.6	2.928644
2.7	3.981071
2.8	5.411695
2.9	7.356422
3.0	10.0

UNIT 1 RMS-II CH #3 & UNIT 2 RMS-II CH #4
CONTAINMENT PURGE STACKS

VOLTAGE TO R/HR CONVERSION TABLES
RANGE 10^{-1} TO 10^{3} R/HR

Volts	Units - R/HR
0.	0.1
0.1	.135
0.2	.184
0.3	.251
0.4	.341
0.5	.464
0.6	.630
0.7	.857
0.8	1.165
0.9	1.584
1.	2.154
1.1	2.928
1.2	3.981
1.3	5.411
1.4	7.356
1.5	10.
1.6	13.593
1.7	18.478
1.8	25.118
1.9	34.145
2.	46.415
2.1	63.095
2.2	85.769
2.3	116.591
2.4	158.489
2.5	215.443
2.6	292.864
2.7	398.107
2.8	541.169
2.9	735.642
3.	1000.

AUXILIARY BUILDING VENT STACK RMS-II CH #1 &
GAS STRIPPER BUILDING VENT STACK RMS-II CH #2

VOLTAGE TO R/HR CONVERSION TABLE
RANGE 10^{-2} TO 10^{4} R/HR

Volts	Units - R/HR
0.	0.01
0.1	.013
0.2	.018
0.3	.025
0.4	.034
0.5	.046
0.6	.063
0.7	.085
0.8	.116
0.9	.158
1.	.215
1.1	.292
1.2	.398
1.3	.541
1.4	.735
1.5	1.
1.6	1.35
1.7	1.847
1.8	2.511
1.9	3.414
2.	4.641
2.1	6.309
2.2	8.576
2.3	11.659
2.4	15.848
2.5	21.544
2.6	29.286
2.7	39.810
2.8	54.116
2.9	73.564
3.	100.

EPIP 1.7
MINOR
Revision 2
07-01-83

EVALUATION OF CORE DAMAGE

1.0 PURPOSE

The purpose of this procedure is to estimate core damage using a mathematical model based on an actual primary coolant sample activity, estimated volume introduced into the primary system through safety injection and a correction factor based on the time since reactor shutdown. This evaluation should be performed by the Core Physics Coordinator or a Duty Technical Advisors and routed to the Technical Support Manager and Site Manager.

2.0 REFERENCE

Calculations performed by the Nuclear Engineering Section of Wisconsin Electric Power Company documented in a report to G. A. Reed dated October 5, 1981 "C & HP Items Related to NUREG-0737."

3.0 PRECAUTIONS

3.1 If fuel damage or loss of reactor coolant system integrity has occurred, some or all of the following would be present:

3.1.1 The letdown radiation monitor (1R9) or the failed fuel radiation monitor (2RE-109) may be unusually high or offscale.

3.1.2 The containment radiation monitors (1R11 & 1R12 or 2RE-211 & 2RE-212) may be unusually high or offscale.

3.1.3 The containment area monitors (1R2 & 1R7 or 2RE-102 & 2RE-107) may be unusually high or offscale.

3.2 Health Physics procedures and requirements must be followed when applicable (e.g., when entering a high radiation area).

3.3 Evaluation of the radiation monitoring system readouts and radiological hazards must be completed prior to any attempt to enter the auxiliary building to take a primary sample.

4.0 INITIAL CONDITIONS

4.1 Applicable portions of EPIP 1.2, "Plant Status," are completed.

4.2 A reactor coolant sample has been taken and a contact reading of the sample bomb has been taken or a final total sample activity has been completed by implementing EPIP 7.3.2 "Post-Accident Sampling & Analysis of Potentially High Level Reactor Coolant."

4.3 A contact reading of the sample bomb in R/hr was taken and listed on form EPIP-30 or an actual sample activity has been received from lab analysis.

5.0 PRIMARY COOLANT SAMPLE ACTIVITY ESTIMATE PROCEDURE

5.1 Note the time of the sample contact reading taken in Section 4.3 on form EPIP-33.

5.2 Determine the amount of time since reactor shutdown to sample contact reading using the equation:

Reactor Shutdown Time - Contact Reading Time = Time Since Shutdown

5.3 Convert the R/hr reading obtained using the teletector to Ci/ml using Attachment 1.7-1.

5.4 Enter the conversion factor from Section 5.3 on form EPIP-33.

5.5 Determine the estimated Sample Activity using the equation:

Estimated Sample Activity (Ci/ml) =

Sample Bomb Contact Reading* (R/hr) x Conversion Factor $\frac{\text{Ci/ml}}{\text{R/hr}}$

*Contact reading is on shielded sample bomb which incorporates 3 inches of external solid lead shielding.

5.6 Enter the estimated Sample Activity on form EPIP-33.

6.0 EXAMPLE

Coolant Sample Activity Estimate (Shielded Bomb)

Teletector reading = 2.75 R/hr

Reading time = 1700

Reactor Shutdown Time = 0900

Time since shutdown: 1700 hours - 0900 hours = 8 hours

$$2.75 \text{ R/hr} \times 5.93 \times 10^{-2} \frac{\text{Ci/ml}}{\text{R/hr}} = 1.63 \times 10^{-1} \text{ Ci/ml}$$

7.0 CORE DAMAGE ESTIMATE PROCEDURE

7.1 Calculate the estimated percentage of core damage using the following formula and table of correction factors. Interpolate correction factors for times between those listed. Use best estimate for safety injection volume.

7.1.1 Estimated Sample Activity (ESA) _____ Ci/ml

7.1.2 Estimated Safety Injection Volume (ESIV) _____ gallons

Available safety injection dilution sources are:

Accumulators: 2 at 1,000 gallons each

Refueling water storage tank: 275,000 gallons

Boric acid storage tank: 1 of 3 at 5,000 gallons each

Spray additive tank: 2,574 gallons

7.1.3 Correction Factor for Time Since Shutdown [CF(t)] _____ hours

7.1.4 Enter the values from Sections 7.1.1, 7.1.2, and 7.1.3 on form EPIP-33. Calculate the percent core damage using the following formula and Attachment 1.7-2 and enter the result on form EPIP-33.

$$\text{Percent Core Damage (\%)} = \frac{\text{ESA} \times (32{,}500 + \text{ESIV})}{\text{CF(t)}}$$

7.1.5 Route form EPIP-33 to the Site Manager and Technical Support Manager.

8.0 EXAMPLE

Percentage Core Damage Estimate

Estimated Sample Activity = 1.63×10^{-1} Ci/ml

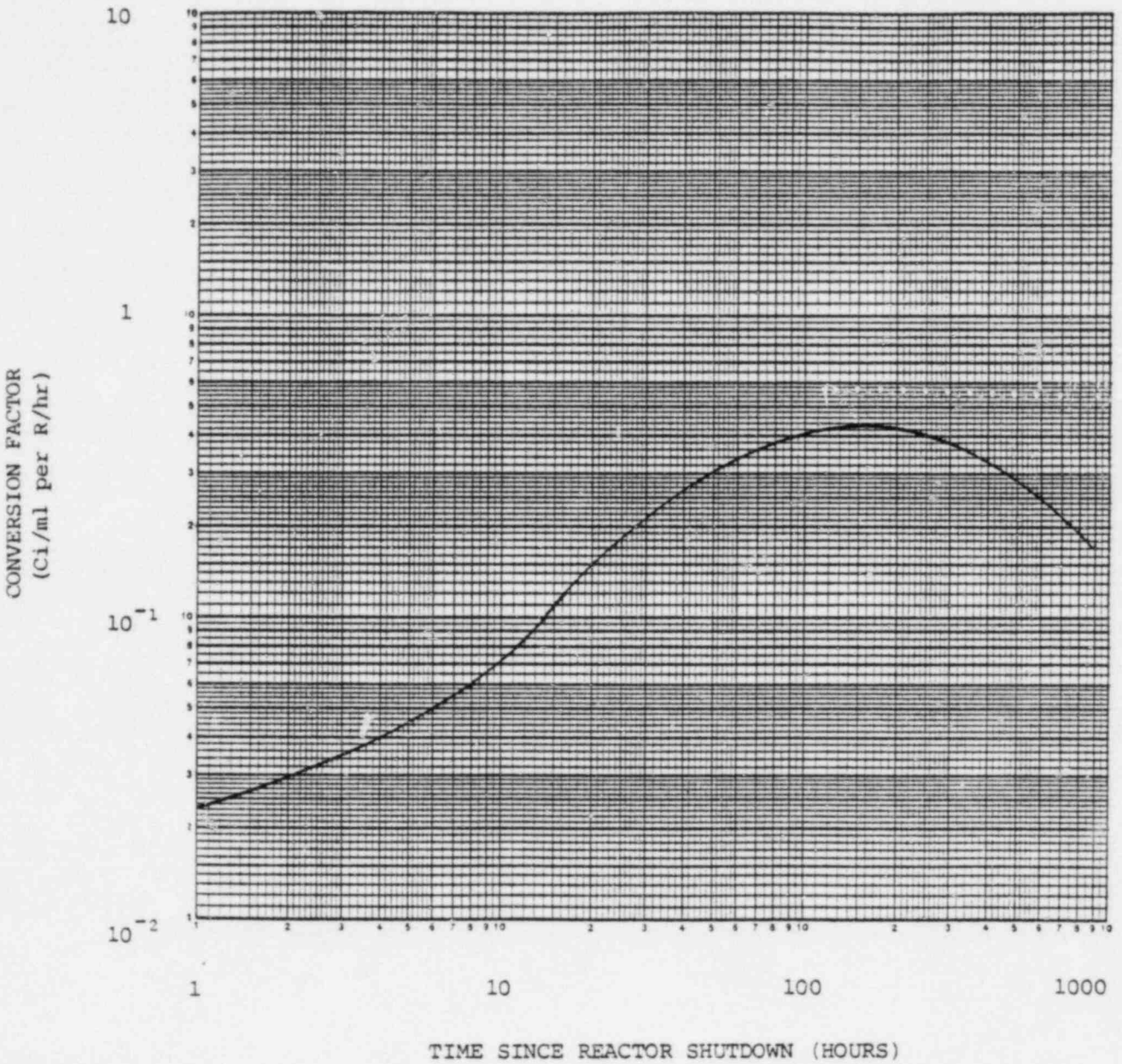
Time since shutdown = 8 hours

Estimated safety injection volume = 2,000 gallons

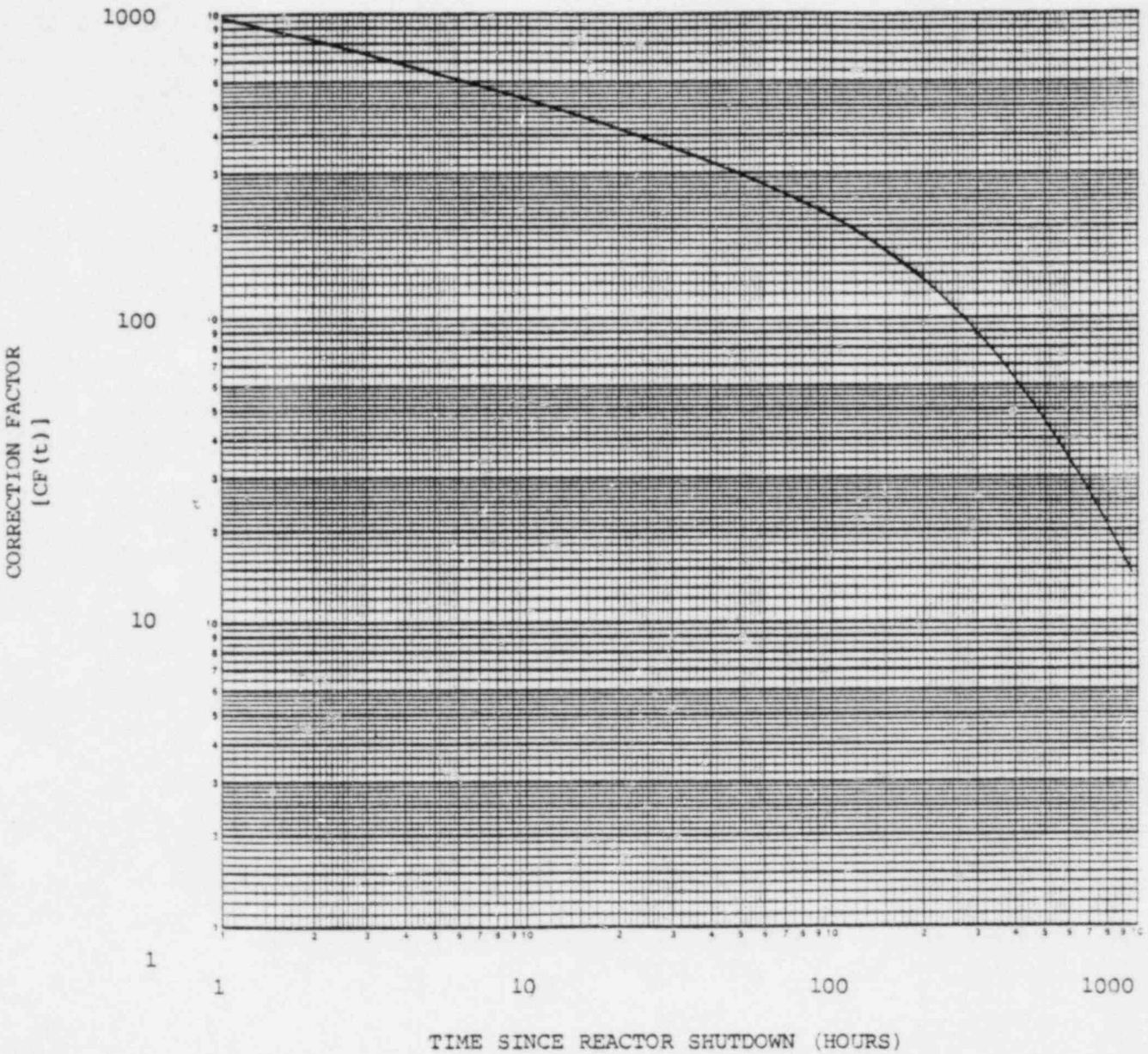
$$\text{Percentage core damage (\%)} = \frac{1.63 \times 10^{-1}\ \text{Ci/ml} \times (32{,}500 + 2{,}000)}{547}$$

Percentage core damage (%) = 9%

ATTACHMENT 1.7-1



ATTACHMENT 1.7-2



EPIP 1.8
MINOR
Revision 3
07-01-83

EMERGENCY OFF-SITE DOSE ESTIMATIONS

1.0 GENERAL

The purpose of this procedure is to provide a method for the expeditious classification of an accident or event based on estimated off-site doses. The procedure provides a methodology to quickly estimate (1) stack release rates (source terms) and (2) off-site whole body and thyroid doses.

2.0 REFERENCES

2.1 U. S. NRC Regulatory Guide 1.109, Calculation of Annual Dose to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR 50 Appendix I, Revision 1, October, 1977

2.2 U. S. EPA "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," EPA-520/1-75-001, September 1975, Appendix D

2.3 TID 14844 "Calculation of Distance Factors for Power and Test Reactor Sites," March 23, 1982

2.4 EDS Report to Wisconsin Electric Power Company concerning NUREG-0578, March 7, 1980.

2.5 Point Beach Nuclear Plant, Final Safety Analysis Report (FSAR)

3.0 PRECAUTIONS & LIMITATIONS

3.1 This procedure is intended for use in the control room by a person designated by the Shift Supervisor such as the Duty Technical Advisor.

3.2 This procedure is to be used only for immediate initial dose projections. The initial dose projections are to be refined using EPIP 1.3 and 1.4 once more data becomes available, i.e., meteorological data, air samples, and off-site survey dose measurements.

3.3 It is recognized that the RadCon/Waste Manager, in conjunction with the Chemistry & Health Physics Supervisor, is ultimately responsible for off-site dose assessments. However, the initial projections will normally be done by the Shift Supervisor or designee for purposes of classifying the event.

4.0 INITIAL CONDITIONS

4.1 An emergency or potential condition which is anticipated to have off-site dose consequences.

4.2 A release of airborne radioactivity has occurred, or a release is anticipated, requiring a conservative estimate of the off-site dose consequences.

5.0 PROCEDURE

5.1 Calculation of Xe-133 Equivalent Release Rates (Source Terms)

5.1.1 Airborne effluents may be discharged from PBNP through the following vent stacks:

a. Auxiliary building vent (ABVNT)

b. Drumming area vent (DAVNT)

c. Unit 1 containment purge vent (Cont. 1)

d. Unit 2 containment purge vent (Cont. 2)

e. Gas stripper building vent (GSBVNT)

f. Combined air ejector decay duct (CAE)

g. Main steam safety valves and atmospheric dump valves

5.1.2 The source terms (vent release rate in Ci/second) may be estimated by using any of the following monitoring systems.

a. Low range operational stack monitors (designed to monitor low-level releases).

b. Eberline RMS II radiation monitoring system (designed to monitor high-level releases).

c. Contact readings using a hand-held survey meter (to be used when other monitor systems are non-operable).

5.1.3 The decision as to which monitoring system is to be used to estimate the source terms is dependent on the level of release and the operability of the monitor.

5.1.4 Meter readings are to be entered in the appropriate column on EPIP-34. If meter readings are "off-scale" or "inoperable," enter the appropriate comment in the meter reading column on EPIP-34. A source term estimate must be made for each vent which is exhibiting readings above normal operating readings.

5.1.5 Direct contact readings using a hand-held survey meter are required when meter readings from the low range monitoring system or the RMS II system are not available.

5.1.6 Direct contact readings using a hand-held survey meter are not to be initiated until the following conditions are accomplished:

a. An evaluation of the radiological hazards must be completed prior to any attempt to enter the auxiliary building or facade to take survey readings on any stack or vent.

b. Before the surveys are done, the proper survey meter and the most direct and desirable route to the stack to be monitored must be chosen.

c. The surveys will be accomplished under the direction of the Health Physics Supervisor. The surveys must be approved by the Site Manager, Duty & Call Health Physics Supervisor, and the Duty Shift Supervisor.

5.1.7 For surveying the main steam safety valves and atmospheric dump valves, the reading will be taken in contact with the centerline of the main steam header, three feet from the main steam line. The survey probe is to be shielded with a minimum of 0.25 inches of lead on the side of the probe facing the main steam line and the containment.

5.1.8 The following data should be obtained from the Shift Supervisor in order to estimate release rates from the main steam safety valves and atmospheric dump valves:

a. Estimated flow rate of steam through the main steam header in lbs/hr.

b. Specific volume of the steam in ft^3/lb. At 1000 psia, specific volume of 0.446 ft^3/lb. At 500 psia, specific volume is 0.928 ft^3/lb.

Enter this data on the appropriate column in Section 3.0 of EPIP-34.

5.1.9 Sum the values on EPIP-34, Section 4.0, to determine the gross Xe-133 equivalent release rate.

5.2 Whole Body Dose Projections

5.2.1 Off-site whole body dose rates may be calculated at the site boundary using the following equation:

$$D\left(\frac{REM}{HR.}\right) = X/Q \times Q \times Kr$$

Where:

D = whole body dose rate (Rem/hr)
X/Q = atmospheric dispersion coefficient (sec/m^3)
Q = gross Xe-133 equivalent release rate (Ci/sec.)

Kr = Dose Factor $\frac{(rem\text{-}m^3)}{Ci\text{-}hrs}$

Projected off-site dose rates may be calculated by entering the total Xe-133 equivalent release rate calculated on EPIP-34 in the appropriate column on EPIP-35 and multiplying the variables in the equations.

5.2.3 Enter the estimated release duration in the appropriate column on EPIP-35. (A dose per hour is calculated by entering an exposure period of one (1) hour.)

NOTE: THE X/Q VALUES LISTED ON EPIP-35 ARE ESTIMATED BASED ON CALCULATED ACCIDENT METEROLOGY FOR 0-2 HRS. AS GIVEN IN THE FSAR. IF REAL TIME METEOROLOGICAL DATA IS AVAILABLE, X/Q VALUES CAN BE CALCULATED AS OUTLINED IN EPIP 1.4 SECTION 5.1. REFINEMENT OF THE PROJECTED OFF-SITE DOSES MAY BE ACCOMPLISHED BY SUBSTITUTING THE REAL TIME X/Q CALCULATED VALUE FOR THE ESTIMATED X/Q ON EPIP-35.

5.3 Thyroid Dose Projection

5.3.1 Calculate the projected thyroid dose at the site boundary on Section 2.0 of EPIP-35 by using the following equation:

Thyroid Dose = Whole Body Dose x Conversion Factor

5.3.2 The conversion factor is dependent on the type of accident which has occurred. Conversion factors are tabulated for the following accidents:

a. Loss of coolant accident (LOCA)

b. Gap activity accident

c. Fuel handling accident

d. Steam generator tube rupture

5.3.3 Choose the appropriate type accident and calculate the thyroid dose in Section 2.0 of EPIP-35 by multiplying the whole body dose calculated in Sectin 1.0 by the conversion factor.

NOTE: IF THE TYPE OF ACCIDENT IS NOT KNOWN, USE THE LOSS OF COOLANT CONVERSION FACTOR.

5.4 Classification of the Event Based on Estimated Off-Site Doses

5.4.1 The event is to be classified as a Site Emergency if the projected off-site doses meet any of the following criteria:

a. Effluent monitors detect levels corresponding to any of the following doses at or beyond the site boundary:

(1) >50 mR/hr whole body for ½ hour

(2) >250 mR/hr for ½ hour for the thyroid

(3) >500 mR/hr whole body for 2 minutes

(4) >2500 mR/hr to the thyroid for 2 minutes

b. Any of the above dose rates are projected, based on plant parameters.

5.4.2 The event is to be classified as a General Emergency if the projected off-site doses meet any of the following criteria:

a. Effluent monitors detect levels corresponding to any of the following doses at or beyond the site boundary:

(1) ≧1 R/hr whole body

(2) ≧5 R/hr thyroid

b. Either of above dose rates are projected based on plant parameters.

5.5 Protective Action Recommendation

5.5.1 Due to the conservative nature of the calculations in this procedure, use EPIP 1.4 to calculate dose projections for protective action recommendations unless it is apparent there is no time to use EPIP 1.4.

5.5.2 Enter dose rates and release duration estimate on EPIP-35. If duration of release is unknown, use a release duration of 8 hours.

5.5.3 Recommend one of the following offsite protective actions based on results of EPIP-35 calculations.

Whole Body Dose

a. <1 R - No planned protective actions.

b. 1 to <5 R - Seek shelter as a minimum. Consider evacuation.

c. >5 R - Conduct evacuation in area affected and public within 2 miles of the plant.

Thyroid Dose

a. <5 R - No planned protective actions.

b. 5 to <25 R - Seek shelter as a minimum. Consider evacuation.

c. >25 R - Conduct evacuation in area affected and public within 2 miles of the plant.

TECHNICAL SUPPORT CENTER & OPERATIONS SUPPORT CENTER ACTIVATION

1.0 PURPOSE

1.1 To provide instructions for the activation of the technical support center after the declaration of an alert, site emergency or general emergency.

1.2 To outline the technical support center ventilation system operation in the event of high airborne activity.

1.3 Operation of the technical support center emergency power supply is also a part of this procedure.

2.0 ACTIVATION OF TECHNICAL SUPPORT CENTER

2.1 Set up 10 tables as shown on Attachment 6.5-1. They may be obtained from the rooms in the adjacent operations support center and health physics areas of the technical support center.

2.2 Install phones from the technical support center storage cabinets in the appropriate areas as shown on Attachment 6.5-1.

2.3 Confirm that all phones operate by noting if dial tone is present when the receiver is lifted. Confirm that the numbers listed on the face of the phone matches the number on the wall jacks.

2.4 Distribute paper and pencils to each table.

2.5 Distribute a copy of the EPIP's to the table in front of the blackboard and the table near the dose plotting map (see Attachment 6.5-1).

2.6 Obtain a copy of each of the following manuals from the front office area and bring them to the technical support center. They may be obtained from the office of the Manager, General Superintendent, or the training offices.

2.6.1 Operating procedures.

2.6.2 Emergency operating procedures.

2.7 Shift the ventilation system from the normal to the emergency operating mode by implementing Section 4.0.

2.8 Date and time the current charts on the safety parameter chart recorders in the technical support center.

2.9 Dispatch a person with systems training (Duty Technical Advisor) to control room to aid in communications between the TSC and control room.

3.0 DATA LOGGER OPERATION

3.1 Push the start button on the data logger. Enter the correct date and time on the printout from the data logger. The designations for each of the 37 channels are contained in Attachment 6.5-2.

3.2 The conversion of incore thermocouple MV to degrees Fahrenheit with the reference junction at 160° is accomplished by use of the incore thermocouple table (see Attachment 6.5-3).

3.3 The conversion of radiological monitoring point volts to mR/hr or R/hr is accomplished by use of the conversion tables (see Attachments 6.5-4, 6.5-5 and 6.5-6).

4.0 EMERGENCY VENTILATION SYSTEM

4.1 The technical support center heating and ventilating system has a normal and emergency operating mode. Under normal operation the air intake is from the outside air vent on the east wall of the technical support center building. The intake air under normal operation is essentially unfiltered.

In the emergency mode, there are two optional air intake locations. One is adjacent to the normal intake on the east wall of the technical support center building and the other is on the north wall of the Unit 2 turbine halll.

4.2 To shift the heating, ventilating and air conditioning system from the normal to emergency mode:

4.2.1 Turn the auto/off/occupied switch on Panel M-1 to the occupied position. See Attachment 6.5-7 for location of Panel M-1.

4.2.2 Turn the normal/emergency control switch on Panel M-1 to the emergency position.

4.2.3 Select the north or south (east) emergency intake depending on meteorological conditions. Select the upwind intake duct.

5.0 TECHNICAL SUPPORT CENTER AUXILIARY AIR CONDITIONING

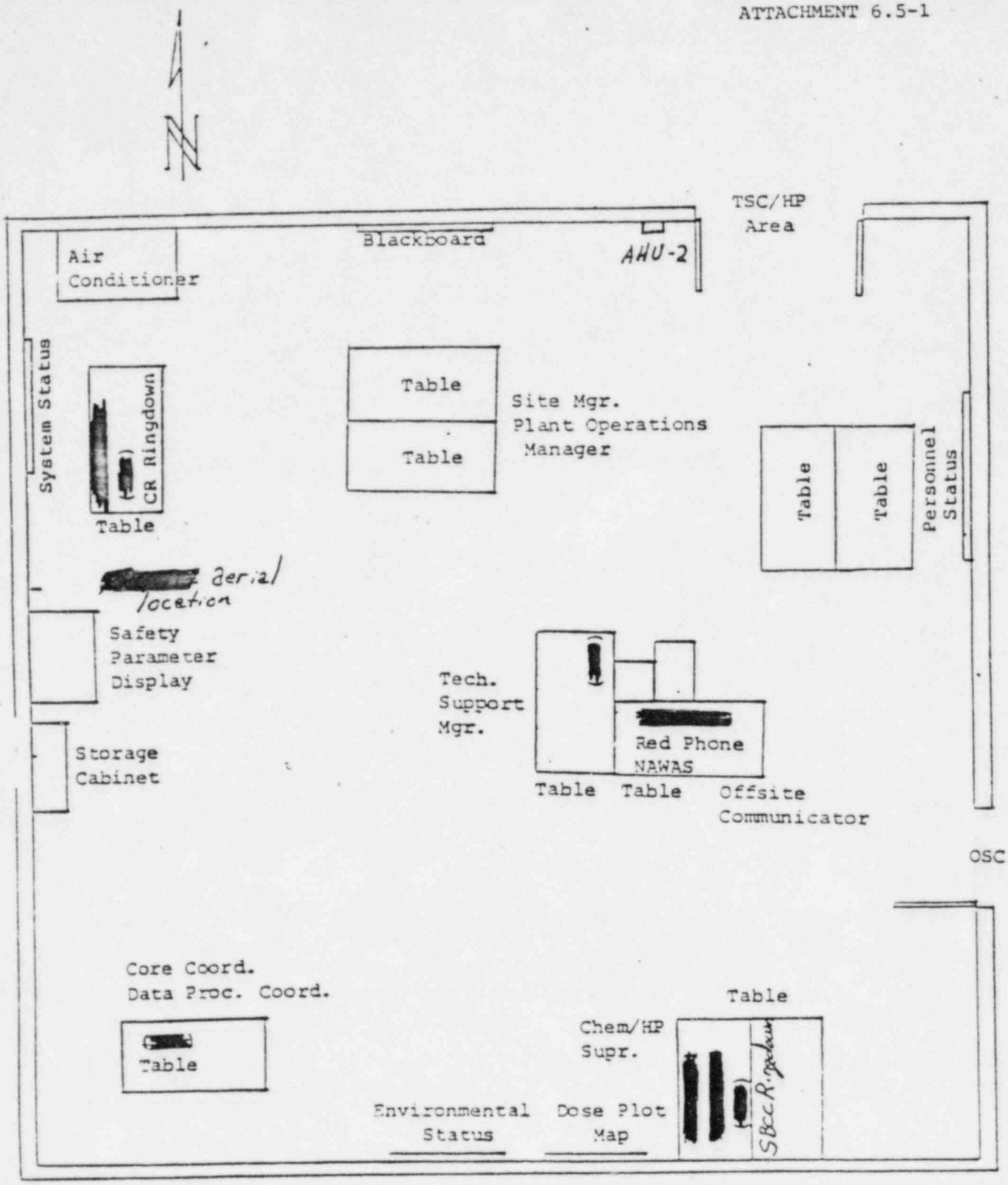
5.1 Turn on compressor CH2 on the west wall of El. 18.5' of the technical support center building (see Attachment 6.5-7).

5.2 Turn on air handling unit AHU2 on the technical support center building room north wall (see Attachment 6.5-1).

6.0 EMERGENCY POWER

6.1 The power source for the technical support center in 1B01 480 V. See Attachment 6.5-8 for the main disconnect location.

6.2 The emergency power source is not operational at this time.



TECHNICAL SUPPORT CENTER

Data Logger Point Designations

Channel	Unit	Status	Parameter	
0	mV	Active	3)	Unit 1 Incore Thermocouples
1	mV	Active	12) Unit 1 Reference	
2	mV	Active	13) RTD	
3	mV	Active	18) Junction Box "A"	
4	mV	Active	22)	
5	mV	Active	26) Unit 1 Reference	
6	mV	Active	29) RTD	
7	mV	Active	36) Junction Box "B"	
8	mV	Active	3)	Unit 2 Incore Thermocouples
9	mV	Active	12) Unit 2 Reference	
10	mV	Active	13) RTD	
11	mV	Active	18) Junction Box "A"	
12	mV	Active	22)	
13	mV	Active	26) Unit 2 Reference	
14	mV	Active	29) RTD	
15	mV	Active	36) Junction Box "B"	
16	°F	Active	Unit 1 Reference RTD Junction Box "A"	
17	°F	Active	Unit 1 Reference RTD Junction Box "B"	
18	°F	Active	Unit 2 Reference RTD Junction Box "A"	
19	°F	Active	Unit 2 Reference RTD Junction Box "B"	
20	gpm	Active	Unit 1 Auxiliary Feed Flow "A" SG	
21	gpm	Active	Unit 1 Auxiliary Feed Flow "B" SG	
22	gpm	Active	Unit 1 SI Flow Train "A"	
23	gpm	Active	Unit 1 SI Flow Train "B"	
24	ft		Unit 1 Containment Sump Level	
26	V	Active	Unit 1 Containment Purge Stack	RMS-II Ch #3
27	gpm		Unit 2 Auxiliary Feed Flow "A" SG	
28	gpm		Unit 2 Auxiliary Feed Flow "B" SG	
29	gpm	Active	Unit 2 SI Flow Train "A"	
30	gpm	Active	Unit 2 SI Flow Train "B"	
31	ft		Unit 2 Containment Sump Level	
33	V	Active	Unit 2 Containment Purge Stack	RMS-II Ch #4
34	V	Active	Drumming Area Vent Stack	RMS-II Ch #2
35	V	Active	Combined Area Vent Stack	RMS-II Ch #5
36	V	Active	Gas Stripper Building Vent Stack	RMS-II Ch #6
37	V	Active	Auxiliary Building Vent Stack	RMS-II Ch #1

POINT B... NUCLEAR PLANT - INCORE T/C TABLE - RE... NCE JUNCTION AT 160. DEG F

MV	DEG F	MV	DEG F	MV	DEG F	MV	DEG F	MV	DEG F	MV	DEG F
0.00	152.	7.60	497.	15.20	824.	22.80	1146.	30.40	1472.	38.00	1811.
0.20	161.	7.80	505.	15.40	833.	23.00	1155.	30.60	1481.	38.20	1821.
0.40	170.	8.00	514.	15.60	841.	23.20	1163.	30.80	1490.	38.40	1829.
0.60	180.	8.20	523.	15.80	850.	23.40	1171.	31.00	1498.	38.60	1839.
0.80	189.	8.40	532.	16.00	858.	23.60	1180.	31.20	1507.	38.80	1848.
1.00	198.	8.60	540.	16.20	867.	23.80	1188.	31.40	1516.	39.00	1857.
1.20	208.	8.80	549.	16.40	875.	24.00	1197.	31.60	1524.	39.20	1867.
1.40	217.	9.00	558.	16.60	883.	24.20	1205.	31.80	1533.	39.40	1876.
1.60	227.	9.20	567.	16.80	892.	24.40	1214.	32.00	1542.	39.60	1885.
1.80	236.	9.40	576.	17.00	901.	24.60	1223.	32.20	1551.	39.80	1894.
2.00	245.	9.60	584.	17.20	909.	24.80	1231.	32.40	1560.	40.00	1904.
2.20	254.	9.80	593.	17.40	918.	25.00	1240.	32.60	1568.	40.20	1913.
2.40	263.	10.00	602.	17.60	926.	25.20	1248.	32.80	1577.	40.40	1922.
2.60	272.	10.20	610.	17.80	935.	25.40	1256.	33.00	1586.	40.60	1932.
2.80	282.	10.40	618.	18.00	943.	25.60	1265.	33.20	1595.	40.80	1941.
3.00	290.	10.60	627.	18.20	951.	25.80	1274.	33.40	1604.	41.00	1950.
3.20	300.	10.80	636.	18.40	960.	26.00	1282.	33.60	1613.	41.20	1960.
3.40	309.	11.00	645.	18.60	968.	26.20	1291.	33.80	1621.	41.40	1969.
3.60	318.	11.20	653.	18.80	977.	26.40	1299.	34.00	1631.	41.60	1979.
3.80	327.	11.40	662.	19.00	985.	26.60	1308.	34.20	1639.	41.80	1988.
4.00	336.	11.60	671.	19.20	993.	26.80	1316.	34.40	1649.	42.00	1998.
4.20	345.	11.80	679.	19.40	1002.	27.00	1325.	34.60	1657.	42.20	2008.
4.40	354.	12.00	688.	19.60	1010.	27.20	1334.	34.80	1666.	42.40	2017.
4.60	363.	12.20	696.	19.80	1019.	27.40	1342.	35.00	1675.	42.60	2026.
4.80	372.	12.40	705.	20.00	1028.	27.60	1351.	35.20	1684.	42.80	2036.
5.00	381.	12.60	714.	20.20	1036.	27.80	1359.	35.40	1693.	43.00	2045.
5.20	390.	12.80	722.	20.40	1045.	28.00	1368.	35.60	1702.	43.20	2055.
5.40	399.	13.00	730.	20.60	1053.	28.20	1377.	35.80	1711.	43.40	2065.
5.60	408.	13.20	739.	20.80	1061.	28.40	1385.	36.00	1720.	43.60	2074.
5.80	417.	13.40	747.	21.00	1070.	28.60	1394.	36.20	1729.	43.80	2084.
6.00	426.	13.60	756.	21.20	1078.	28.80	1403.	36.40	1738.	44.00	2094.
6.20	434.	13.80	765.	21.40	1087.	29.00	1411.	36.60	1748.	44.20	2103.
6.40	444.	14.00	773.	21.60	1095.	29.20	1420.	36.80	1756.	44.40	2113.
6.60	452.	14.20	782.	21.80	1103.	29.40	1429.	37.00	1766.	44.60	2123.
6.80	462.	14.40	790.	22.00	1112.	29.60	1437.	37.20	1775.	44.80	2133.
7.00	470.	14.60	799.	22.20	1120.	29.80	1446.	37.40	1784.	45.00	2142.
7.20	479.	14.80	807.	22.40	1129.	30.00	1455.	37.60	1793.	45.20	2152.
7.40	488.	15.00	816.	22.60	1138.	30.20	1463.	37.80	1802.	45.40	2162.

0.00 TO 45.40 MV REFERENCE JUNCTION AT 160. DEG F

ATTACHMENT 6.5-3

DRUMMING AREA VENT STACK RMS-II CH #2 &
COMBINED AIR EJECTOR DISCHARGE RMS-II CH #5

VOLTAGE TO R/HR CONVERSION TABLE

RANGE 1 to 10^4 R/HR

Volts	Units R/hr
0	0.001
0.1	0.00135
0.2	0.001847
0.3	0.002511
0.4	0.003414
0.5	0.004641
0.6	0.006309
0.7	0.008576
0.8	0.011659
0.9	0.015848
1.0	0.021544
1.1	0.029286
1.2	0.039810
1.3	0.054116
1.4	0.073564
1.5	0.100
1.6	0.135935
1.7	0.184784
1.8	0.251188
1.9	0.341454
2.0	0.464158
2.1	0.630957
2.2	0.857695
2.3	1.165914
2.4	1.584893
2.5	2.154434
2.6	2.928644
2.7	3.981071
2.8	5.411695
2.9	7.356422
3.0	10.0

UNIT 1 RMS-II CH #3 & UNIT 2 RMS-II CH #4
CONTAINMENT PURGE STACKS

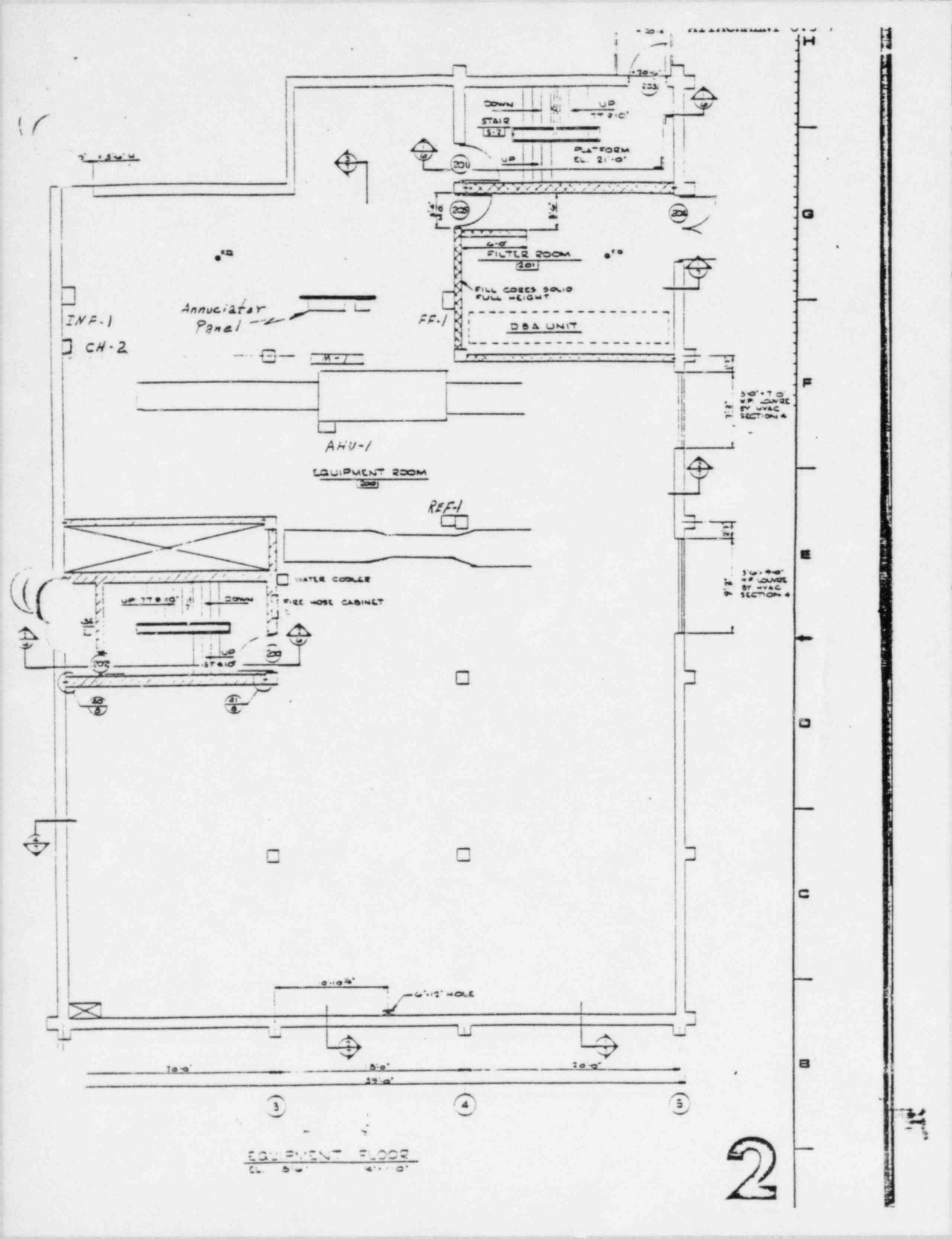
VOLTAGE TO R/HR CONVERSION TABLES
RANGE 10^{-1} TO 10^{3} R/HR

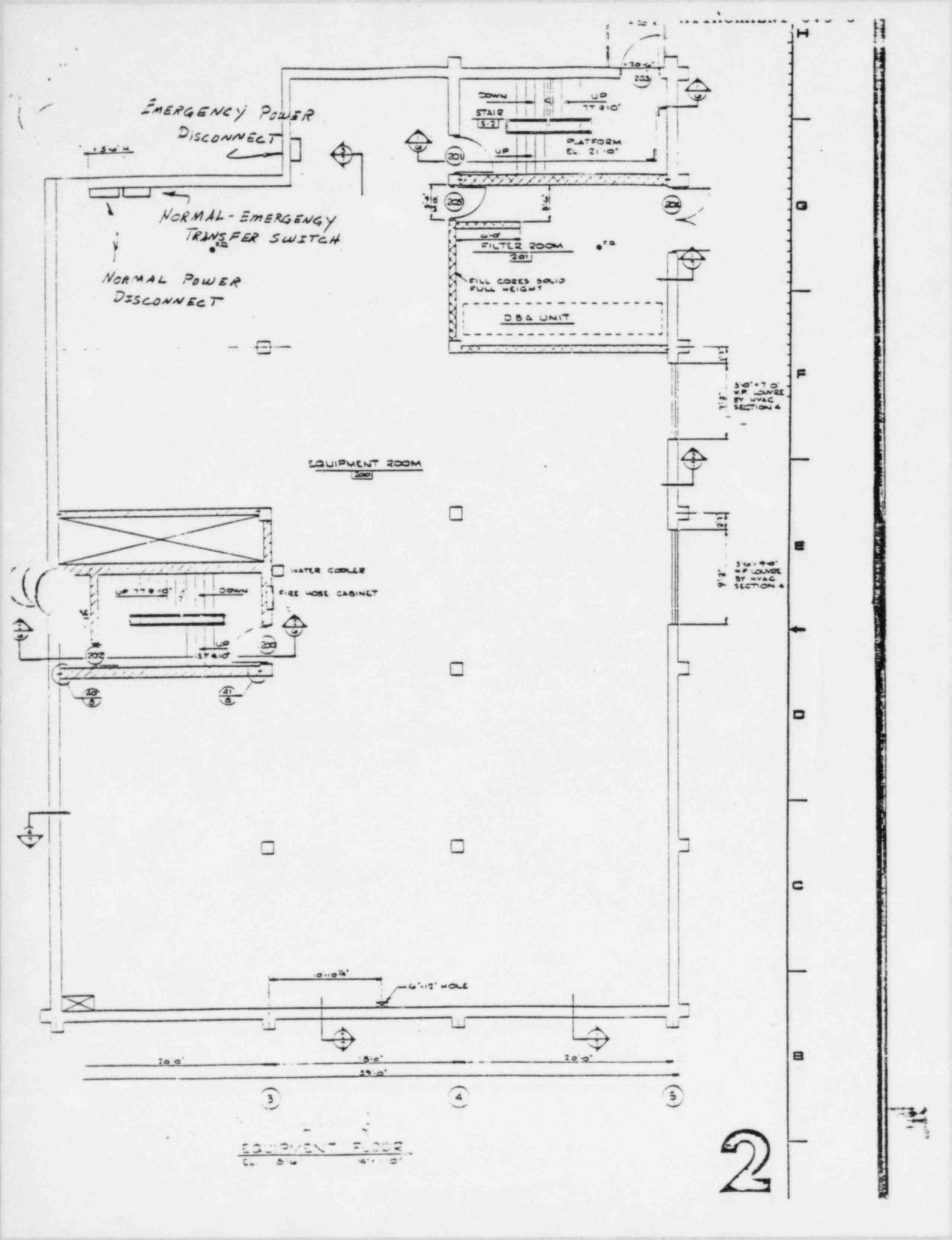
Volts	Units - R/HR
0.	0.1
0.1	.135
0.2	.184
0.3	.251
0.4	.341
0.5	.464
0.6	.630
0.7	.857
0.8	1.165
0.9	1.584
1.	2.154
1.1	2.928
1.2	3.981
1.3	5.411
1.4	7.356
1.5	10.
1.6	13.593
1.7	18.478
1.8	25.118
1.9	34.145
2.	46.415
2.1	63.095
2.2	85.769
2.3	116.591
2.4	158.489
2.5	215.443
2.6	292.864
2.7	398.107
2.8	541.169
2.9	735.642
3.	1000.

AUXILIARY BUILDING VENT STACK RMS-II CH #1 &
GAS STRIPPER BUILDING VENT STACK RMS-II CH #2

VOLTAGE TO R/HR CONVERSION TABLE
RANGE 10^{-2} TO 10^{2} R/HR

Volts	Units - R/HR
0.	0.01
0.1	.013
0.2	.018
0.3	.025
0.4	.034
0.5	.046
0.6	.063
0.7	.085
0.8	.116
0.9	.158
1.	.215
1.1	.292
1.2	.398
1.3	.541
1.4	.735
1.5	1.
1.6	1.35
1.7	1.847
1.8	2.511
1.9	3.414
2.	4.641
2.1	6.309
2.2	8.576
2.3	11.659
2.4	15.848
2.5	21.544
2.6	29.286
2.7	39.810
2.8	54.116
2.9	73.564
3.	100.


DOWN
UP
STAIR
PLATFORM
EL. 21'-0"
FILTER ROOM
201
FILL CORES SOLID FULL HEIGHT
DBA UNIT
Annuciator Panel
INF-1
CH-2
FF-1
AHU-1
EQUIPMENT ROOM
REF-1
WATER COOLER
FIRE HOSE CABINET
6'-1 1/2" HOLE
EQUIPMENT FLOOR
2


EMERGENCY POWER DISCONNECT
NORMAL - EMERGENCY TRANSFER SWITCH
NORMAL POWER DISCONNECT
DOWN
STAIR
UP
PLATFORM EL 21'-0"
FILTER ROOM
201
FILL CORES SOLID FULL HEIGHT
DBA UNIT
EQUIPMENT ROOM
201
WATER COOLER
FIRE HOSE CABINET
6"x12" HOLE
20'-0"
15'-0"
55'-0"
3
4
5
EQUIPMENT FLOOR
2
I
H
G
F
E
D
C
B

POST-ACCIDENT SAMPLING AND ANALYSIS OF POTENTIALLY HIGH LEVEL REACTOR COOLANT

1.0 INTRODUCTION

1.1 This procedure outlines the steps necessary to collect, handle and analyze a high level reactor coolant sample which could result from gross fuel failure.

1.2 Equipment List

Set up the following in the primary sample hood prior to collecting your sample:

1.2.1 The equipment detailed in Figures 2A and 2B, with the exception of the sample bomb.

1.2.2 Two magnetic stirrers and two 50 ml poly beakers and a 50 ml beaker.

1.2.3 A pH/mv meter, pH probe and chloride/reference electrodes.

1.2.4 A piston burette.

1.2.5 A lead brick wall of sufficient size to store residue from analysis.

1.2.6 Chemical transfer pump.

1.2.7 Remote handling tools located in the cabinet below the hood.

1.2.8 Prepare a 1.0 liter sidearm flask with a correctly sized solid stopper and rubber septum over the sidearm.

1.2.9 Gas syringe

The following equipment is also necessary for this procedure and need to be made ready.

1.2.10 The gas partitioner for H_2 analysis.

1.2.11 The special cart used for transport of the sample bomb.

1.2.12 Tools for connecting and disconnecting sample bomb; i.e., 11/16" open end wrench or equivalent.

1.2.13 Remote valve turning tool. This tool as well as those mentioned in Step 1.2.12 are necessary for sampling and should be taken along and placed on the sample bomb transport cart.

The following reagents are also necessary and need to be prepared.

1.2.14 0.1N NaOH for boron. Obtain a supply from normal boron analysis.

1.2.15 2.0M HNO_3 for chloride analysis.

1.2.16 Manitol for boron analysis.

1.3 Preliminary Steps — Initials

1.3.1 Standardize the pH meter. _____

1.3.2 Organize as much of the equipment as possible behind lead brick walls in an arrangement that allows for unobstructed view of all operations with the aid of the convex mirror. (See Figure 2.) _____

1.3.3 Put new rubber septum on gas bomb. _____

1.3.4 Condition and check out chloride/reference electrodes. _____

1.3.5 Check out and prime the piston burette with fresh 0.1N NaOH solution. _____

1.3.6 Check out the operation and calibration of the chemical transfer pump by pumping chloride free deionized water through the pump. _____

2.0 PRELIMINARY EVALUATION

NOTE: THIS EVALUATION SHALL BE COMPLETED PRIOR TO ANY ATTEMPT TO ENTER THE AUXILIARY BUILDING OR SAMPLE ROOM TO OBTAIN A REACTOR COOLANT SAMPLE UNDER EMERGENCY CONDITIONS.

2.1 Possible Indication of Fuel Damage — Initials

Some or all of the following would be present if fuel damage had occurred:

2.1.1 The letdown radiation monitor (R9) would be unusually high or offscale. _____

2.1.2 The Unit 1 containment radiation monitors (R11 and R12) or the Unit 2 containment radiation monitors (R211 and R212) would be unusually high or offscale. _____

2.1.3 The Unit 1 containment area monitors (R2 and R7) or the Unit 2 containment area monitors (R102 and R107) would be reading unusually high or offscale. _____

2.1.4 The auxiliary building stack monitor (R14) would show a significant increase due to auxiliary building airborne activity from the letdown and charging pump areas. _____

2.1.5 Evaluation of Sample Room Conditions

a. The sample room area monitor (R6 or R106) and charging pump area monitor (R4 or R104) would give an indication of conditions in the auxiliary building and sample room. _____

b. After evaluation of the radiation monitoring system readouts, Health Physics will determine what airborne and radiation surveys would be appropriate before auxiliary building entry. _____

c. Verify the requirements for auxiliary building sample room entry, i.e., (1) RWP requirements, (2) clothing requirements, (3) respiratory requirements, and (4) dosimetry requirements including extremity dose monitoring requirements, and (5) health physics coverage requirements including timekeeping. _____

2.2 Possible Loss of Component Cooling

2.2.1 Verify that component cooling is still in service to the affected unit. Sample cannot be obtained without component cooling to sample room heat exchangers. _____

3.0 REACTOR COOLANT SAMPLING PROCEDURE

NOTE: THIS PROCEDURE SHALL NOT BE INITIATED UNTIL THE EVALUATIONS DISCUSSED IN SECTION 2.0 HAVE BEEN COMPLETED AND REVIEWED BY DUTY & CALL SUPERINTENDENT (COORDINATOR), DUTY HEALTH PHYSICS SUPERVISION AND THE DUTY SHIFT SUPERINTENDENT, AND THEIR APPROVAL HAS BEEN GRANTED.

3.1 Collecting a Pressurized Sample (Refer to Figure 1) Initials

NOTE: THE FOLLOWING STEPS WILL BE ACCOMPLISHED UNDER THE DIRECTION OF HEALTH PHYSICS SUPERVISION AND ONLY AFTER COMPLETING SECTION 1.0 OF THIS PROCEDURE.

3.1.1 The following steps (a through f) must be accomplished before opening the incontainment sample isolation valve 955 (Step 3.1.2) and the hot leg sample isolation valve 966C (Step 3.1.3). _____

a. Verify that the demineralized water header pressure is approximately 100 to 120 psi. _____

NOTE: THIS STEP MAY BE DELETED IF REACTOR MAKEUP WATER IS USED FOR THE FLUSH.

b. Proceed to the sample room and install the shielded sample bomb on the outside wall of the sample room using the fittings provided. _____

CAUTION: BEFORE REMOVING THE SWAGE LOCK CAPS TO INSTALL THE BOMB, OPEN VALVES 939, 940 AND 941 TO RELIEVE SYSTEM PRESSURE. CLOSE VALVES 939, 940 AND 941. PLACE A WASTE BUCKET DIRECTLY UNDER THE BOMB. USE A PAPER TOWEL SHIELD AND RUBBER GLOVES WHEN REMOVING CAPS.

c. Verify that the dimineralized water line is connected from valve 945 to the demineralized water manifold. Open demineralized H_2O valves 945, 947, and 948 and check for leaks on the bomb fittings. Shut valves 945, 947, and 948. _____

d. Enter the sample room and close the following valves on the sample panel.

1. 961C - Normal hot leg sample bomb inlet. _____

2. 964C - normal hot leg sample bomb outlet. _____

Initials

3. 965C - normal hot leg sample bypass. _____

4. 968 - normal hot leg return valve. _____

5. 971 - normal hot leg sink sample valve. _____

e. Notify the control room that the failed fuel monitor (RE-109) will be taken out-of-service for sampling; then close:

938B - detector RE-109 inlet valve _____
938A - detector RE-109 outlet valve _____

f. Further verify that there is component cooling flow to the sample room heat exchangers by viewing the local flow indicator (FI-603) on the sample panel. _____

g. Open the following valves on the sample panel.

1. 969A - sample system purge to volume control tank. _____

2. 956C - normal hot leg sample supply valve. _____

3. 990 - residual heat removal sample supply valve. _____

h. Leave the sample room and position the following valves wide open. These valves are located on the sample room wall.

1. 939 - sample bomb inlet. _____

2. 940 - sample bomb bypass. _____

3. 941 - sample bomb outlet. _____

NOTE: FOR DRILLS AND TRAINING EXERCISES OPEN VALVE 941 ONLY ONE-QUARTER TURN TO ELIMINATE N-16 GAMMAS.

3.1.2 Open the incontainment hot leg sample isolation valve (valve 955) and the residual heat removal sample isolation valve (valve 959) by means of the switches located outside the No. 1 pipeway for Unit 1 or No. 4 pipeway for Unit 2. _____

CAUTION: IF THE AFFECTED UNIT IS ALREADY ON RHR, LEAVE THE AREA IMMEDIATELY AFTER OPENING VALVE 959 AS BACKGROUND RADIATION LEVELS WILL RISE SHARPLY.

If the valve No. 955 will not open because of containment isolation, perform the following steps (1 through 3). _____

1. Request that the Control Room reset the containment isolation signal. _____

2. Turn the local control switch positions for valves 951, 953, and 955 to the "close" position. _____

3. Turn the local control switch for valve 955 to the "open" position. _____

NOTE: SECTION 3.1.2 MUST BE ACCOMPLISHED BEFORE SAFETY INJECTION RECIRCULATION HAS BEGUN.

3.1.3 Leave the area and request control room to open the hot leg sample isolation valve (966C). _____

3.1.4 Verify sample flow by an increase in the radiation level. _____

3.1.5 After a recirc time of 30 minutes, return to the sample station and using the remote valve operating tool, fully open valves 9B and 9A and 8A and 8B. _____

a. Slowly and completely close valve 940. _____

b. Leave the primary auxiliary building. _____

NOTE: THE VALVE OPERATING TOOL SHOULD BE USED TO OPERATE ALL VALVES EXCEPT 945, 946, 947 AND 948 (FLUSH VALVES).

3.1.6 After 15 additional minutes, return to collect the sample. Close valves 9B and 9A and then valves 8B and 8A using the remote valve operating tool. Make a note of the sample collection time.

NOTE: DO NOT DISCONNECT THE SAMPLE BOMB UNTIL SAMPLE FLOW IS SECURED AND THE DI FLUSH IS COMPLETE AS EVIDENCED BY REDUCTION IN RADIATION LEVELS.

3.1.7 Request control room to immediately close the hot leg sample isolation valve 966C.

NOTE: IT IS VERY IMPORTANT THAT THE HOT LEG SAMPLE ISOLATION VALVE 966C IS CLOSED PRIOR TO STARTING THE DI FLUSH. WAIT FOR CONFIRMATION FROM THE CONTROL ROOM.

4.0 SAMPLE LINE FLUSHING

4.1 Leave valve 939 open, and fully open valves 940 and 941. Open valves 945 and 946. Allow the lines to flush for at least 15 minutes.

NOTE: DO NOT REMAIN IN THE AREA OF THE SAMPLE STATION DURING THIS FLUSH.

4.2 After about 15 minutes return and measure radiation levels. If a Chemistry & Health Physics Supervisor determines that the levels are satisfactory, close whitey valve 946 and using the remote valve tool, close valve 939. Then open valve 947 and valve 948 and allow about a 15-minute DI flush.

4.3 After about 15 minutes, close valves 940 and 941 with the remote valve tool and then close valves 945, 947, and 948. Disconnect valve 945 from the demineralized water manifold and cap both ends. Disconnect the sample bomb from the fittings using a paper towel to prevent spraying. Remove the shielded sample bomb from its support. Remove excess liquid from the top and bottom bomb fittings with a syringe and dispose behind lead shielding. Replace the Swagelok caps on the wall fittings and on the bomb. Transport the bomb, remote valve tool and wrenches to the chemistry lab on a cart.

NOTE: AFTER DRILLS AND TRAINING EXERCISES, RETURN ALL EQUIPMENT AND VALVE LINEUPS TO NORMAL.

4.4 Enter the sample room and notify control room that the failed fuel monitor (RE-109) is to be returned to service and that the sample room valving is to be returned to normal.

4.4.1 Close Valves:

1. 966C - Containment hot leg sample isolation valve _____
2. 961C - Normal hot leg sample bomb inlet _____
3. 964C - Normal hot leg sample bypass _____
4. 965C - Normal hot leg sample bypass _____
5. 971 - Normal hot leg sink sample valve _____
6. 939 - High level sample bomb inlet _____
7. 940 - High level sample bomb bypass _____
8. 941 - High level sample bomb outlet _____
9. 945, 946, 947, 948 - Demineralized water flush valves _____

NOTE: DISCONNECT VALVE 945 FROM THE DEMINERALIZED WATER MANIFOLD. ADVISE CONTROL TO REDUCE DEMINERALIZED WATER HEADER PRESSURE TO NORMAL.

4.4.2 Open Valves:

1. 938B - Failed fuel monitor RE-109 inlet _____
2. 938A - Failed fuel monitor RE-109 outlet _____
3. 956C - Normal hot leg sample supply valve _____
4. 968 - Normal hot leg return valve _____
5. 969A - Sample system purge to volume control tank _____

5.0 SEPARATION OF THE PRESSURIZED SAMPLE AND ANALYSIS OF THE GASEOUS AND LIQUID COMPONENT (Refer to Figures 2A and 2B)

5.1 Collecting the Gaseous Sample From the Pressurized Sample

5.1.1 Place the shielded sample bomb in the sample holder in the primary sample hood. _____

5.1.2 Connect the sample bomb to the shielded gas collection bomb by means of the fittings provided. Place lead bricks in the area of this connection for shielding. _____

5.1.3 Connect the valve manifold to the opposite end of the sample bomb and verify that valve 11 on the manifold is open. _____

5.1.4 Make sure that the vacuum line is attached to the gas collection bomb at the valve 1 location. Open valves 1 and 2. Secure valve 3. Evacuate the gas bomb and connecting lines. With vacuum still on, secure valve 1. Secure vacuum. _____

5.1.5 Before proceeding, make sure no inleakage has occurred into the gas bomb by observing the vacuum gauge reading. Using the remote valve tool, fully open valves 9A and 9B. Open valve 8A one-quarter turn. Crack open valve 8B and control degassing by throttling valve 8B. Allow the system to degas for 5 minutes. Check that valves 9A and 9B, 8A and 8B are fully open. Close valve 2. _____

NOTE: OBSERVE THE VACUUM GAUGE. THE VACUUM SHOULD DROP VERY SLOWLY. IF THE DROP IS TOO RAPID, CLOSE VALVE 8B SLIGHTLY. DROP SHOULD BE 5-10" HG/MIN.

5.2 Analysis of Gaseous Sample

5.2.1 Hydrogen

Use a syringe to draw a 1 cc sample. Use the injection port on the gas partitioner for this analysis. _____

5.2.2 Radioactive Noble Gas

Use a syringe to draw a 1/2 cc sample and inject this into the flask prepared in Section 1.2.8.* Allow 30 minutes for thermal mixing. Draw a 1/2 cc sample of this dilution and proceed as normal. _____

*Additional dilution should be performed if the contact reading is >1 mr/hour.

NOTE: SEE SECTIONS 7.0 AND 8.0.

5.3 Collecting the Liquid Sample From the Pressurized Sample

5.3.1 Add one drop of 2 M nitric acid (per 10 ml of sample) to the chloride beaker for pH adjustment. _____

NOTE: IT IS EXTREMELY IMPORTANT TO VERIFY THAT VALVE 2 HAS BEEN CLOSED BEFORE PROCEEDING.

5.3.2 Open valve 3 slowly. Allow the liquid sample to drain into the 50 ml beaker. Direct a slow stream of air through the vent line on valve 3 if necessary to recover the total liquid sample. _____

5.3.3 Close valves 8A and 8B, 9A and 9B, and valve 3. _____

5.4 Analysis of Liquid Samples

5.4.1 Boron/pH Analysis

a. Transfer a 5 ml sample using the chemical transfer pump into a 50 ml poly beaker containing a stir bar. _____

NOTE: OBSERVE THE TRANSFER PUMP OPERATION. WHEN SAMPLE BEGINS TO ENTER THE BEAKER, THE TRANSFER RATE IS 0.5 ML/SECOND OR 10 SEC = 5 ML.

b. After transfer is complete, record the pH. _____

c. Plug in the magnetic stirrer, add mannitol, and proceed with the boron analysis. _____

NOTE: IF THE PRIMARY SYSTEM HAS BEEN BORATED, 5 ML OR MORE OF TITRANT MAY BE NEEDED TO REACH AN ENDPOINT.

NOTE: AFTER DRILLS AND PRACTICE RUNS, THE BORON TITRATOR MUST BE FLUSHED WITH DEIONIZED WATER AND PUT IN DRY LAY-UP. ALL ELECTRODES SHOULD BE PLACED IN LAYUP SO THEY ARE CONDITIONED FOR IMMEDIATE USE.

5.4.2 Chloride Analysis

Transfer the remainder of the sample to the second poly beaker containing the chloride electrode. Start the stirring action and record the potential. Use the calibration curve for the chloride electrode to determine chloride concentration.

NOTE: CHLORIDE SAMPLE MUST BE pH ADJUSTED. SEE STEP 5.3.1.

NOTE: HIGH LEVELS OF RADIOACTIVE IODINE IN THE COOLANT WILL INTERFERE WITH THE CHLORIDE ANALYSIS. REFER TO THE ATTACHED IODINE/ CHLORIDE CORRECTION CURVE (ATTACHMENT 7.3.2-1) TO MAKE THE PROPER ADJUSTMENT TO THE CHLORIDE ELECTRODE ANALYSIS.

5.4.3 Iodine Analysis and Gamma Scan

Using the specially prepared 2 cc syringe, withdraw 0.3 cc of the sample from the poly beaker used for the chloride analysis and inject this sample into a 1000 ml poly bottle containing demineralized water. Make additional dilutions in the same manner.* Count as normal.

*Additional dilution should be performed until the contact reading is <1 mr/hour.

NOTE: SEE SECTIONS 7.0 AND 8.0.

5.5 Reporting of Results

Complete and forward Reactor Coolant Post-Accident Sampling Analysis Report (EPIP-30).

6.0 SAMPLE RESIDUE

Place all sample residue in the specially prepared lead pig for disposal.

7.0 SAMPLES TAKEN TO KEWAUNEE NUCLEAR PLANT FOR COUNTING

Reference: Post-accident counting agreement with Wisconsin Public Service, Kewaunee Nuclear Plant.

Kewaunee Nuclear Plant does not utilize the 5 cc glass vial and 1 cc test tube geometries. Therefore, "normal" samples will have to be diluted and placed in one liter poly bottles if they are sent to the Kewaunee Nuclear Plant for analysis.

8.0 LABELING OF SAMPLES

Label all chloride, noble gas, iodine and gamma scan samples with all pertinent information such as: sample number, name of sample, date and time of sampling, sample volume and dilution(s).

ATTACHMENT 7.3.2-1

CORRECTION FOR REACTOR COOLANT IODINE
INTERFERENCE WITH CHLORIDE ELECTRODE RESPONSE

1.0 INTRODUCTION

Chloride as determined by the chloride specific ion electrode is subject to interference caused by the presence of high levels of other halogens, specifically iodine. The following procedure outlines the method used to estimate the correction for this interference.

2.0 PROCEDURE

2.1 Measure the chloride concentration using the chloride specific ion electrode.

2.2 Perform the iodine analyses as outlined in Section 5.4.3 of this procedure.

2.3 Convert the iodine concentration to ppm using the following conversion factors.

Isotope	µCi/cc → ppm Conversion Factor
I-130	2.54×10^{-5}
I-131	3.85×10^{-4}
I-132	4.71×10^{-6}
I-133	4.23×10^{-5}
I-134	1.78×10^{-6}
I-135	1.38×10^{-5}

2.4 Sum the concentration, in ppm, of each iodine isotope and use the attached curve to determine the estimated chloride concentration correction factor.

3.0 EXAMPLE

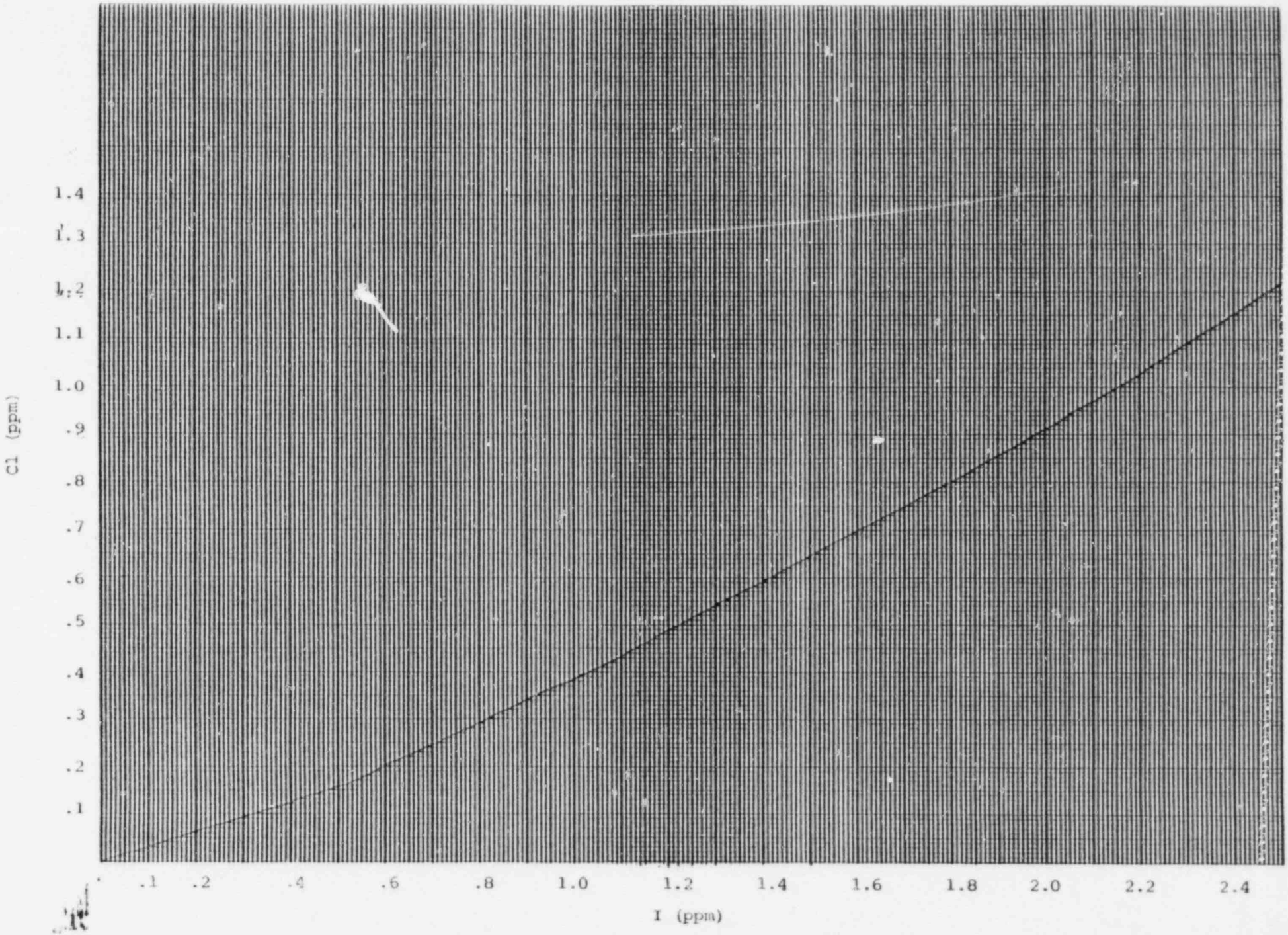
Reactor Coolant Analysis

Isotope	Concentration (µCi/cc)		Conversion Factor	Estimated Concentration (ppm)
I-131	2.56×10^{3} µCi/cc	X	3.85×10^{-4}	9.86×10^{-1}
I-133	1.45×10^{2} µCi/cc	X	4.23×10^{-5}	6.13×10^{-3}
I-135	5.65×10^{3} µCi/cc	X	1.38×10^{-5}	7.80×10^{-2}
TOTAL				1.07 ppm

Chloride concentration from correction curve (ppm) = 0.42 ppm

Subtract this value from the chloride concentration determined by the chloride electrode.

CHLORIDE ELECTRODE IODINE INTERFERENCE
CORRECTION CURVE



ATTACHMENT 7.3.2-1 (cont.)

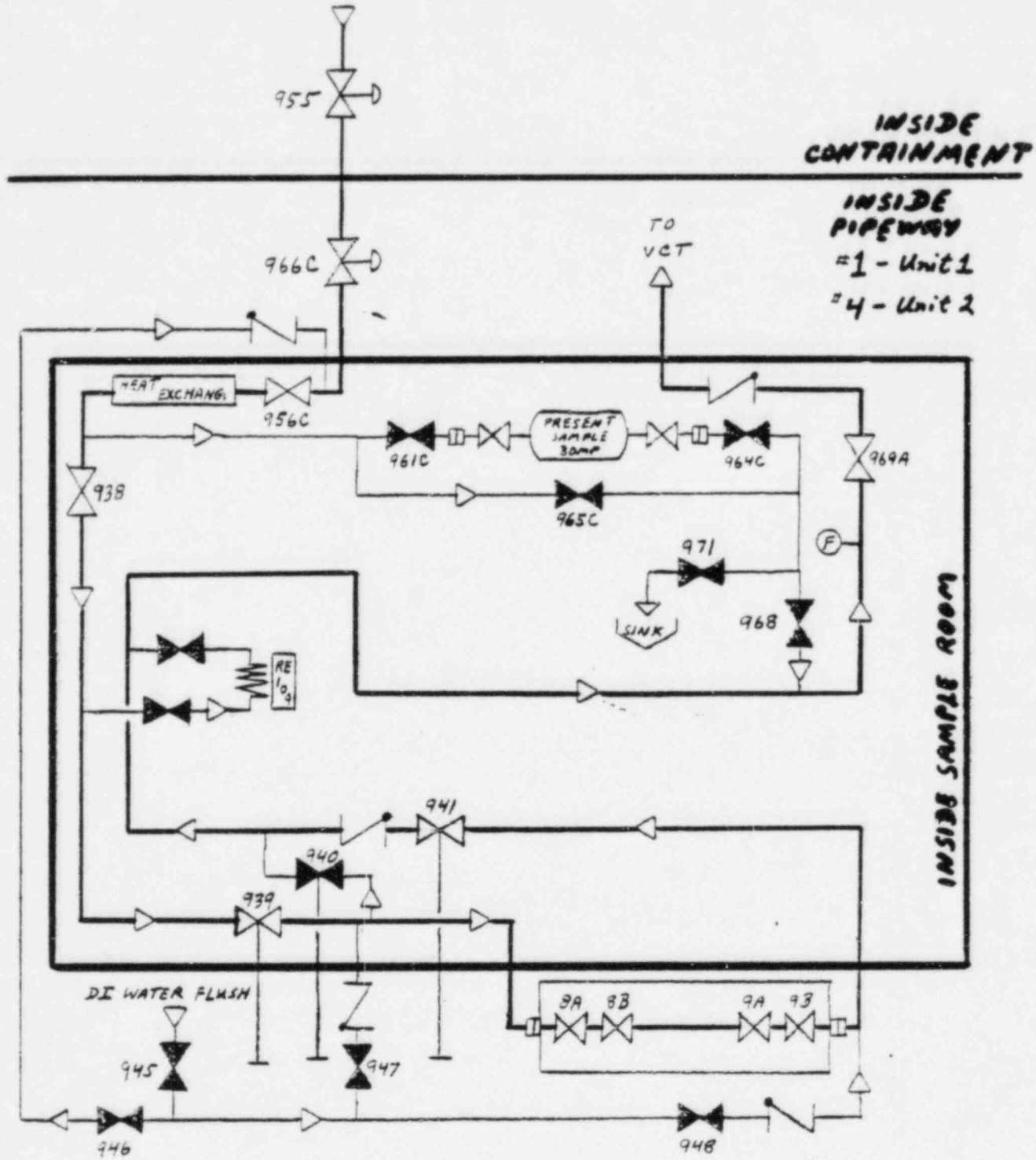


FIGURE 1
PRIMARY COOLANT
HIGH LEVEL SAMPLING
FLOW DIAGRAM

WISCONSIN ELECTRIC POWER COMPANY
Point Beach Nuclear Plant

SYSTEM		FILE
DWG. NO.	REV	DATE
MOD. REQ. NO.		DATE
ORIGINATOR		
CHANGE INCORPORATED BY		
DWG. NO.	REV	DATE

K & E 10-1846

CALCULATION SHEET

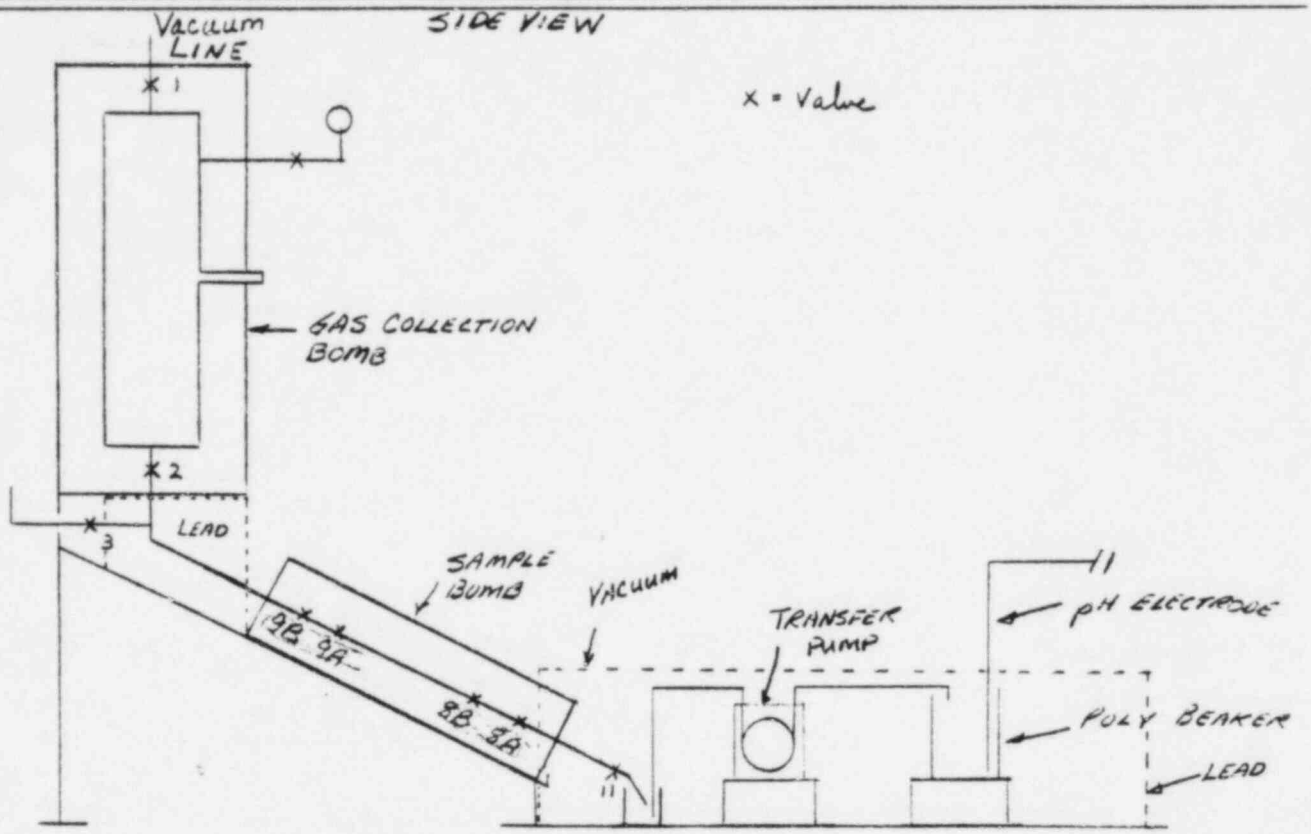
SHEET _____ OF _____

FILE No. _____

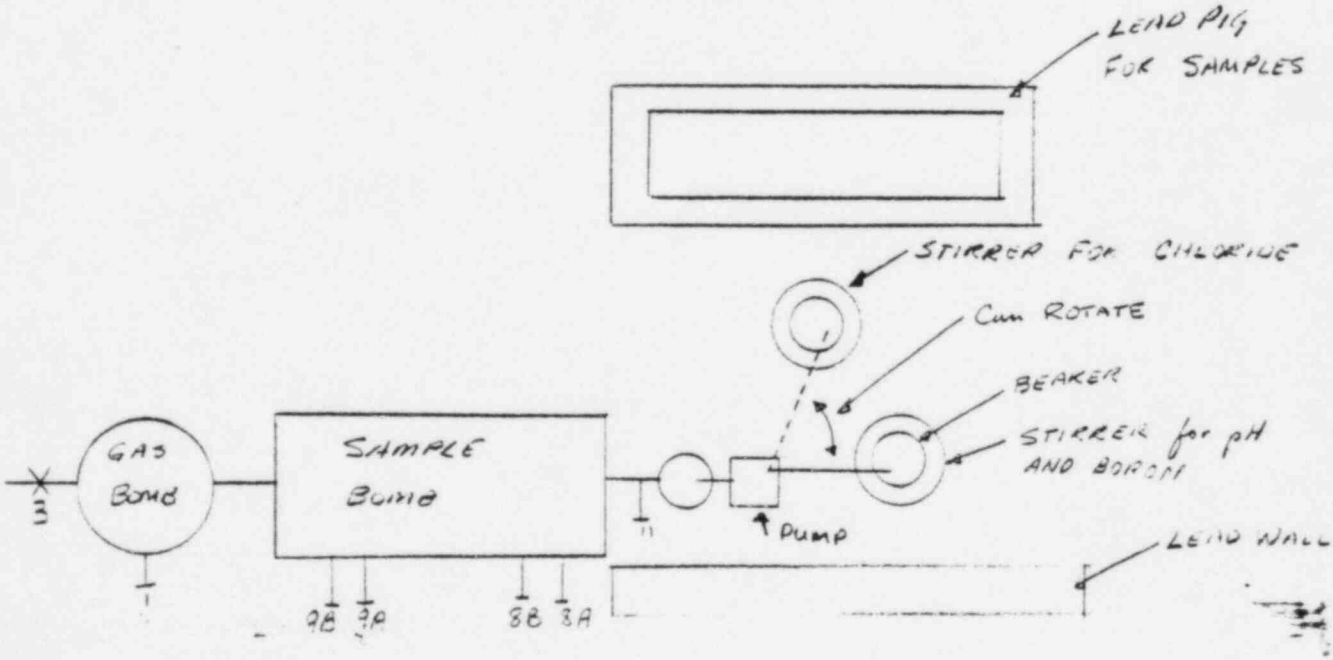
FIGURE 2 A

MADE BY _____ DATE _____

CHKD. BY _____ DATE _____



TOP VIEW



CALCULATION SHEET

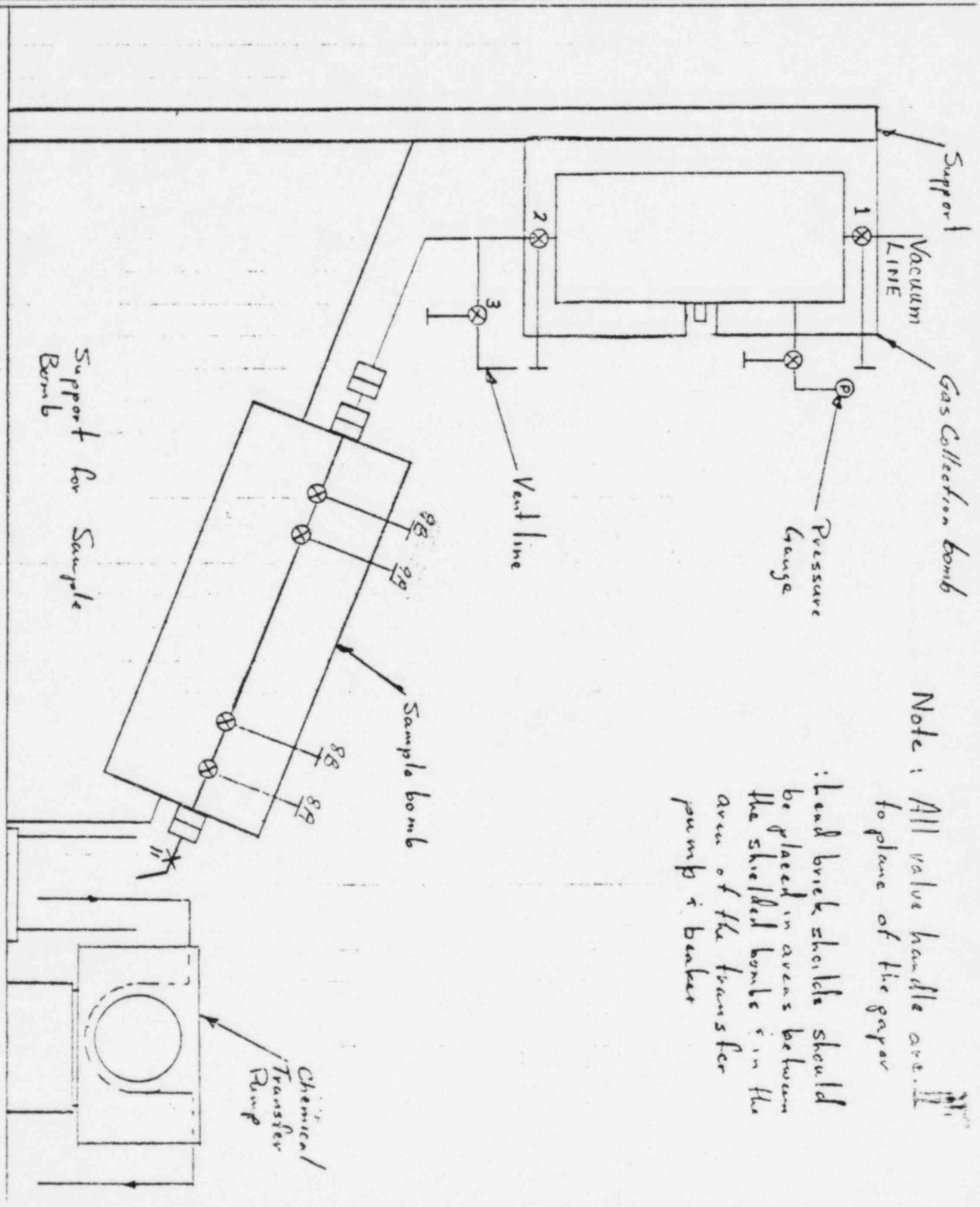
SHEET _____ OF _____

FILE No. _____

SUBJECT Sample Bomb Laboratory Set up

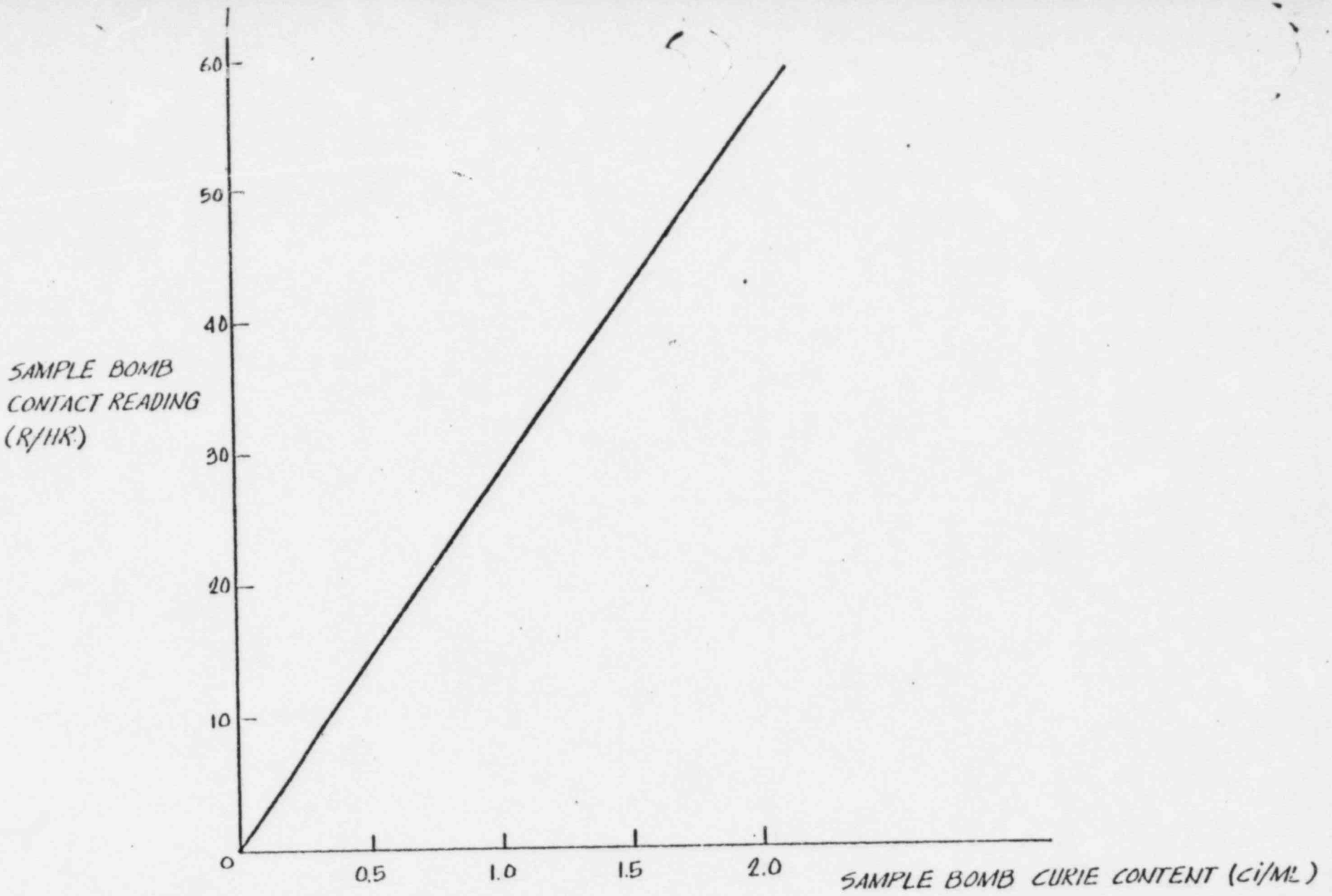
MADE BY RJS DATE 1/3/90

CHKD. BY CHH DATE 1/3/90



Note : All value handle are to plane of the paper

: Lead brick shields should be placed in areas between the shielded bombe & in the area of the transfer pump & beaker



REV.	DATE	REVISIONS	BY	REV'D	APPR'D
A	12-21-71	INITIAL ISSUE PRELIMINARY	YHR	NPM	

eldis nuclear

SAMPLE BOMB CURIE CONTENT V.S. CONTACT READING - ONE RCS DILUTION, NO RECIRCULATION
POINT BEACH NUCLEAR PLANT
UNIT 1 & 2
WISCONSIN ELECTRIC POWER CO.
MILWAUKEE, WISCONSIN

SCALE. N.T.S.
JOB NO. 0870-001
DRAWING NO. FIGURE 1 2.1.8.a
REV. A
SHEET 1 OF 1

POST-ACCIDENT SAMPLING OF CONTAINMENT ATMOSPHERE

1.0 INTRODUCTION

This procedure outlines the steps necessary to collect, handle and analyze a potentially high radioactive containment atmosphere sample resulting from gross fuel failure and loss of reactor coolant system integrity to determine hydrogen and radioactive gas concentrations.

2.0 PRELIMINARY EVALUATION

NOTE: THE FOLLOWING EVALUATION SHALL BE COMPLETED PRIOR TO ANY ATTEMPT TO ENTER THE FACADE OR R11/R12 CUBICLE TO PERFORM A VALVE LINEUP OR COLLECT A CONTAINMENT ATMOSPHERE SAMPLE.

2.1 Indications of Possible Fuel Damage

Some or all of the following would be present if fuel damage or loss of reactor coolant system integrity had occurred:

2.1.1 The letdown radiation monitor (R9) would be unusually high or offscale.

2.1.2 The containment radiation monitors 1R11 and 1R12 or 2R11 and 2R12 would be unusually high or offscale.

2.1.3 The containment area monitors 1R2 and 1R7 or 2RE-102 and 2RE-107 would be unusually high or offscale.

2.1.4 The automatic actions of EOP-1A have caused containment isolation.

2.2 Evaluation of Radiological Hazards in Access Areas Required for Sampling

Initials

2.2.1 After evaluation of the radiation monitoring system readouts, verify with Health Physics that the appropriate airborne and radiation surveys have been made before entering the facade. _____

Initials

2.2.2 Verify the requirements for facade and 1R11/1R12 or 2R211/2R212 cubicle entry.

a. Radiation work permit requirements

b. Clothing requirements

c. Respiratory requirements

d. Dosimetry requirements including extremity dose monitoring

e. Health physics coverage requirements including timekeeping _____

3.0 CONTAINMENT ATMOSPHERE SAMPLING PROCEDURE

NOTE: THE FOLLOWING PROCEDURE SHALL NOT BE INITIATED UNTIL THE EVALUATION DISCUSSED IN SECTION 2.0 HAS BEEN COMPLETED. THE DUTY & CALL SUPERINTENDENT (COORDINATOR), THE DUTY AND CALL HEALTH PHYSICS SUPERVISOR AND THE DUTY SHIFT SUPERINTENDENT SHALL APPROVE THE IMPLEMENTATION OF THIS PROCEDURE. THE FOLLOWING STEPS WILL BE ACCOMPLISHED UNDER THE DIRECTION OF HEALTH PHYSICS SUPERVISION.

3.1 Unit 1 Containment Atmosphere Sampling Using the 1R11/1R12 Sampling System

3.1.1 Valve Lineup

a. Entry into the facade shall be from the potable water room.

b. Verify with the control room that the 1R11/1R12 sampling system is lined up in accordance with the following:

(1) The containment isolation valves 3200C and 3200G are closed. _____

(2) The 3200A&B AOV's in the R11/R12 cubicle are closed. _____

(3) The 1P707 forced purge pump is secured. _____

Initials

c. Proceed to the R11/R12 cubicle, and place the 1R11/1R12 sampling system in the following lineup:

(1) Open valves 1-3200J and 1-3200L. _____

(2) Close valve 1-3200M. _____

(3) Verify that the continuous vent valves 1-3200S and 1-3200W are closed. _____

(4) Close valve 1-3200K. _____

d. Connect the 100' service air hose to the Chicago fitting located on the elevator side of the cubicle established for sample line purging. _____

NOTE: THE AIR HOSE IS STORED INSIDE THE 1R11/1R12 CUBICLE, ALONG WITH THE PRESSURE REGULATOR.

e. Verify that valve 1-3200Y is closed. _____

f. Proceed to the potable water room with the air hose and pressure regulator.

NOTE: FOR RCT TRAINING EXERCISES, DO NOT USE THE POTABLE WATER ROOM SERVICE AIR HOOKUPS, SINCE THEIR USE UNNECESSARILY BURDENS SECURITY. THE SERVICE AIR HOOKUPS LOCATED ON THE EL. 66' CONTROLLED SIDE FACADE WILL ARE TO BE UED.

(1) Attach the service air hose to an available turbine hall service air outlet using the pressure regulator designated for this procedure. _____

(2) Lock the Chicago fitting in place using the appropriate pins. _____

g. Verify with the control room that the 1R11/1R12 monitor is lined up to monitor, and discharge to, containment atmosphere. _____

h. Request the control room to open the 1-3200A&B AOV sample system valves and the containment isolation valves 1-3200C&G. _____

Initials

i. Verify sample flow by an increase in radiation levels in the cubicle, and return to the potable water room. _____

j. Allow five minutes for sample recircing. Request control room to stop the pump and close 1-3200A, B, C & G AOV isolation valves. _____

3.1.2 Sample Collection

a. Enter the facade and proceed to the sample point. Take along two 2 cc gas syringes in a hollowed-out lead break. _____

CAUTION: CONTAINMENT PRESSURE COULD THEORETICALLY BE AS HIGH AS 60 PSIG. HOLD THE SYRINGE PLUNGER SECURELY. ALSO, LOCK THE GAS SYRINGES BEFORE WITHDRAWING FROM THE SAMPLING SEPTUM, USING THE BUILT-IN LOCKING DEVICE ON THE SYRINGE.

b. Remove the set screw and take one 1/2 cc and one 1 cc gas sample. Place the syringes in the lead brick. _____

c. Replace the set screw and open valve 3200Y. _____

d. Leave the facade and return to the potable water room. _____

3.1.3 Sample Line Purging

a. Open service air valve and adjust the pressure to a setting of 10 psig greater than measured containment pressure. _____

b. Request control room to open the pump discharge isolation valve 1-3200A. _____

c. Request control room to start the 1R11/1R12 pump. _____

d. Verify purge effectiveness by measuring the reduction in radiation levels after approximately 15 minutes of purging. _____

Initials

e. Request control room to close the 1-3200A pump discharge isolation valve, secure the pump, and open the 1-3200B&C pump suction isolation valves. _____

f. Continue the purge for 10 more minutes. _____

g. Request control room to close all pump discharge and suction isolation valves and secure the pump. _____

h. Secure the service air valve. _____

NOTE: AFTER DRILLS AND PRACTICE RUNS, RETURN ALL EQUIPMENT AND VALVE LINEUPS TO THE AS-FOUND CONDITION.

3.2 Unit 2 Containment Atmosphere Sampling Using the R211/R212 Sampling System, After Containment Isolation

3.2.1 Valve Line-Up

a. Verify with the control room that the following conditions exist:

(1) Valves 3200A, B & C have closed. _____

(2) Pumps P707A&B have been secured. _____

(3) Valve 3200G is lined up to return flow to the containment (Position 1). _____

(4) Valves 3200D, E, F & H are closed. _____

b. Obtain the designated 100' service air line and pressure regulator from the Unit 1 R11/R12 cubicle. _____

c. Proceed to the nonnuclear room with the air hose and pressure regulator. _____

NOTE: FOR RCT TRAINING EXERCISES, DO NOT USE THE NONNUCLEAR ROOM SERVICE AIR HOOKUPS, SINCE THEIR USE UNNECESSARILY BURDENS SECURITY. THE SERVICE AIR HOOKUPS LOCATED ON EL. 66' CONTROLLED SIDE FACADE WALL ARE TO BE USED.

Initials

(1) Attach the service air hose to an available turbine hall service air outlet using the pressure regulator designated for this procedure. _____

(2) Lock the Chicago fitting in place using the appropriate pins. _____

d. Proceed to the R211/R212 cubicle and perform the following:

(1) Connect the service air hose to the Chicago fitting attached to valve 3200Y, and verify that the valve is closed. _____

NOTE: THE VALVE IS LOCATED ON THE ELEVATOR SIDE OF THE R211/R212 CUBICLE.

(2) Enter the cubicle and close valve 3200B. _____

e. Request the control room perform the following:

NOTE: THE SAMPLE PUMP P707A SEALS ARE RATED FOR 5 PSI. TO PREVENT AN INADVERTENT AIRBORNE RELEASE, THE CONTAINMENT PRESSURE MUST BE LESS THAN 5 PSI BEFORE PROCEEDING.

(1) Verify containment pressure is less than 5 psi. _____

(2) Place the sample mode switch located in the cable spreading room in the septum position. _____

(3) Open AOV's 3200A&B and the containment valve 3200C. _____

(4) Start sample pump P707A. _____

f. Verify sample flow by observing a flow increase on FIT-3288 and return to the nonnuclear room. _____

Initials

g. Allow 15 minutes for sample recirculation and return to the cubicle with two (2) 2 cc gas-tight syringes in a hollowed-out lead brick. _____

3.2.2 Sample Collection

a. Withdraw a 1 cc gas sample and a 1/2 cc gas sample from the sample septum by means of the gas-tight syringes. Lock the syringe plunders, and place them in the lead bricks. _____

b. Establish a service air pressure of 5 psi on the regulator and open valve 3200Y. _____

3.2.3 Sample Line Purge

a. Return to the nonnuclear room and request the control room close valves 3200B&C. _____

b. Allow the system to purge forward for 25 minutes, then request the control room perform the following:

(1) Secure the sample pump P707A. _____

(2) Close AOV-3200A and place valve 3200S in its normal position (Position 1). _____

(3) Open AOV-3200B&C. _____

c. Allow the system to purge backwards 25 minutes and request the control room close valves 3200B&C. _____

d. Return to the cubicle and perform the following:

(1) Verify the effectiveness of the purge by measuring the reduction of the radiation levels. _____

(2) Enter the cubicle and open valve 3200K. _____

(3) Close the service air hose regulator, close valve 3200Y and remove the service air hose. _____

Initials

e. Notify the control room that sampling has been completed. _____

NOTE: AFTER ALL DRILLS AND PRACTICE EXERCISES, ALL EQUIPMENT AND VALVE LINEUPS ARE TO BE RETURNED TO THE AS-FOUND CONDITION.

4.0 CONTAINMENT ATMOSPHERE ANALYSIS

4.1 Volume Adjustments

4.1.1 Before proceeding with the hydrogen, radioactive noble gas and radioactive iodine analyses, the sample contents of both syringes must be brought to atmospheric pressure. Use the shielded sacrificial glass bomb for this purpose.

4.1.2 Insert the syringe through the rubber septum of the glass bomb. Unlock the syringe locking device and let the syringe and bomb equilibrate for approximately 30 seconds. Relock the syringe and withdraw from the septum. Store the syringe in the lead brick.

4.1.3 Repeat Step 4.1.2 for the other syringe.

4.2 Hydrogen

Assuming normal equipment setup and preparations are complete, use the sample injection port on the gas partitioner, inject a 1 cc gas sample and proceed using normal hydrogen analysis procedures. _____

4.3 Radioactive Noble Gases and Iodines

4.3.1 Couple the silver zeolite column and the evacuated glass bomb as shown in Figure 3.

4.3.2 Inject the 1/2 cc containment atmosphere sample into the column through the septum. Remove the syringe and store in the lead brick.

4.3.3 Using a second syringe tip (without the plunger) puncture the column septum and fully insert the syringe tip.

4.3.4 Crack open the upper glass bomb valve between the bomb and the column. Allow air to slowly bleed through the column to the bomb. Flow can be verified by observing the gentle reflux of the siver zeolite surface. When flow has ceased, momentarily open the upper valve wide open and then close completely.

4.3.5 Remove the column from the bomb and store the bomb behind shielding in the hood.

Iodines

4.3.6 Remove the septum from the column and pour the silver zeolite into a counting test tube and cap.

4.3.7 If the silver zeolite/iodine sample is less than one mR/hr contact, count the sample directly on the MCA using the test tube geometry and a multiplying factor of two.

4.3.8 If the iodine activity is too high to count directly, determine the radiation level in mR/hr at one foot. Also, determine the percent isotopic composition using the MCA and attenuating the sample if necessary.

Determine the total iodine activity using the following equation:

$$C_{(Ci)} = \frac{R/hr\ @\ 1'}{6E_T}$$

The following table can be used as an aid in determining the "Total Average Energy/γ" (E_T) for the above equation.

Isotope	(1) Average γ Energy	(2) % Composition (Fraction)	(1) x (2) Weighted γ Energy
I^{131}	0.380	_____	_____
I^{132}	0.731	_____	_____
I^{133}	0.530	_____	_____
I^{134}	0.857	_____	_____
I^{135}	1.238	_____	_____

Total Energy/γ (E_T) _____

Each individual iodine isotopic concentration (μCi/cc) is calculated as follows:

$$\mu Ci/cc\ I_{(i)} = C_{(Ci)} \times 2 \times 10^{+6} \times (\text{Fractional \% Composition})$$

Noble Gases

4.3.9 Withdraw a 1/2 cc gas sample from the glass bomb in Step 4.3.5. If the contact reading on the syringe is less then one mR/hr, inject the sample into a 5 cc vial and count as normal. If the contact reading is greater than one mR/hr, further dilutions are necessary.

Dilution procedure: Inject the 1/2 cc sample into a one liter poly bottle and allow to equilibriate. Withdraw 1/2 cc from the poly bottle. If the contact reacing is less then one mR/hr, inject into a 5 cc vial and count as normal. If the contact reading is greater than one mR/hr, dilute further.

NOTE: FOR EACH DILUTION, USE A NEW SYRINGE OR MAKE CERTAIN THE OLD SYRINGE IS COMPLETELY PURGED. LABLE NOBLE GAS SAMPLES AND IODINE SAMPLES WITH ALL PERTINENT INFORMATION SUCH AS: SAMPLE NUMBER, NAME OF SAMPLE, DATE AND TIME OF SAMPLE, SAMPLE VOLUME AND DILUTION(S).

5.0 CALCULATIONS

5.1 Pressure and Temperature Correction

Ask control room supervision for the temperature and pressure in containment (psig and °F). Determine atmospheric pressure (mm Hg) and temperature (°F) from the barometer in the laboratory. Convert this to psia. Apply the following correction factor to all results:

Initials

$$\text{Concentration } (\mu Ci/cc) \times \frac{(P \quad + 14.7)}{P_{lab}} \quad \frac{T \quad + 459}{T_{lab} + 459} \qquad \_\_\_\_\_$$

$$P_{lab\ (psia)} = 14.7 \text{ psi} \times \frac{P \quad (\text{mm Hg})}{760 \text{ mm Hg}}$$

5.2 Complete and forward Containment Atmospheric Post-Accident Sampling Analysis Report (EPIP-31).

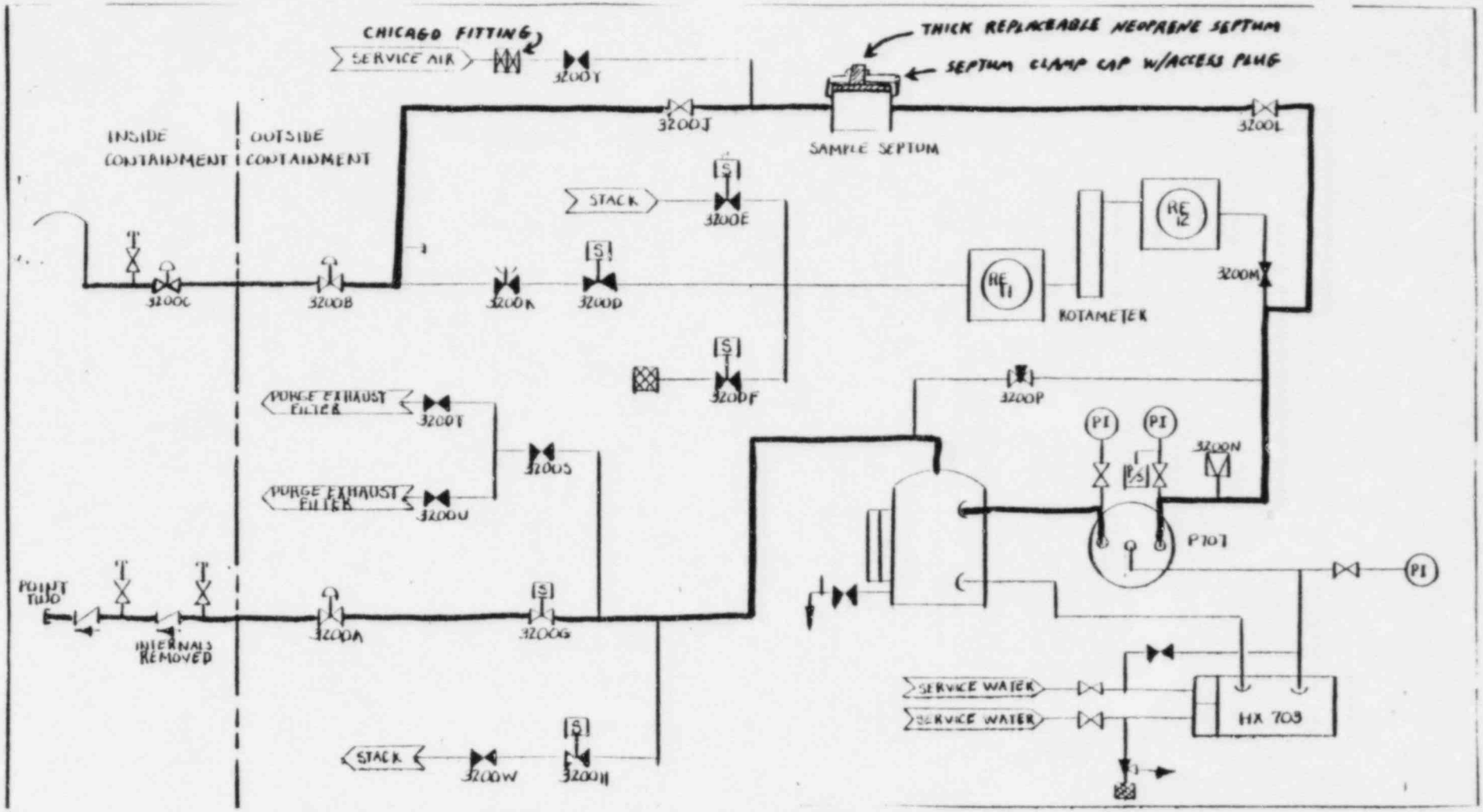


FIGURE 1

UNIT 1 CONTAINMENT ATMOSPHERE SAMPLING R11/R12 VALVE LINE-UP

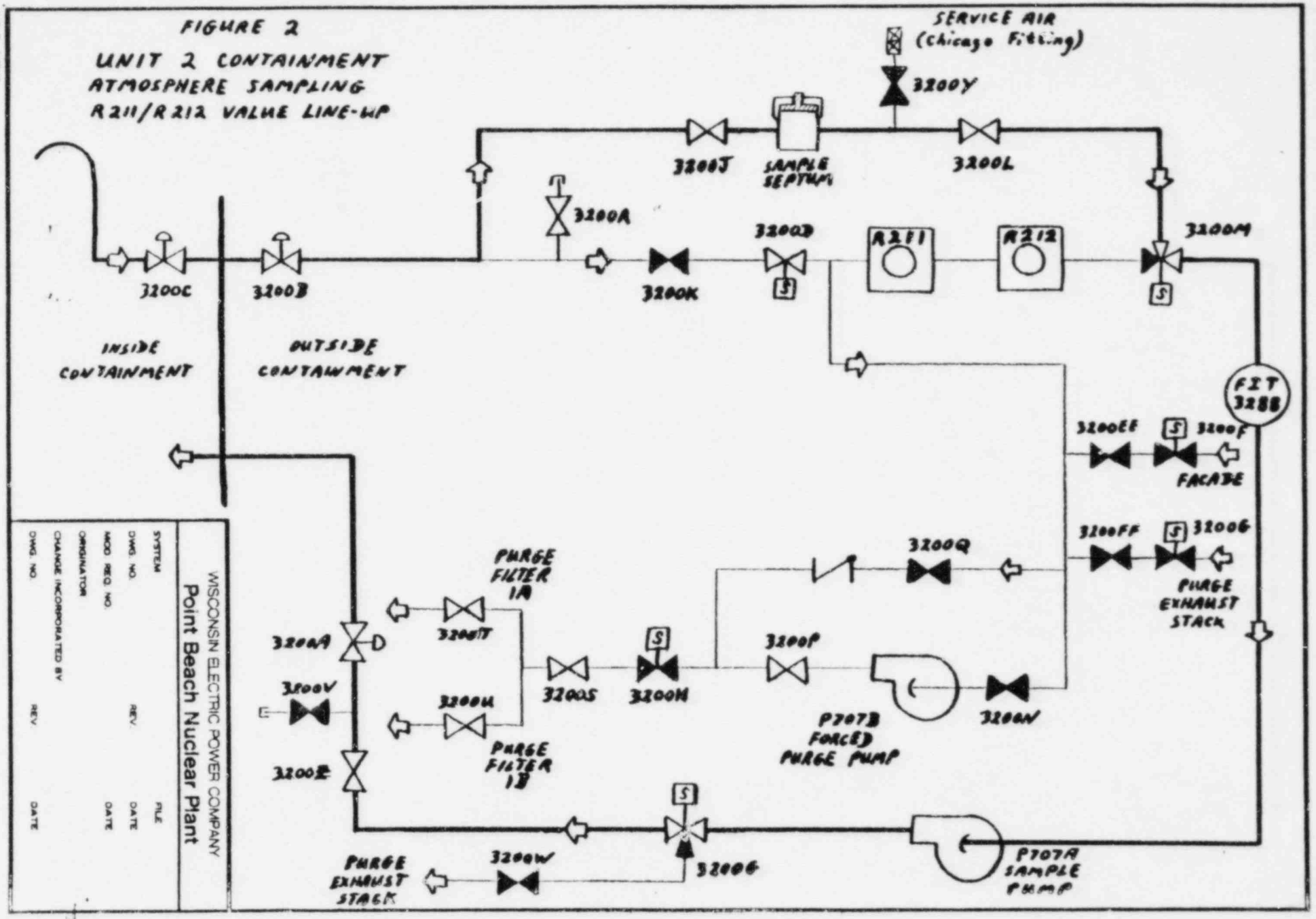


FIGURE 2
UNIT 2 CONTAINMENT
ATMOSPHERE SAMPLING
R211/R212 VALVE LINE-UP
SERVICE AIR
(Chicago Fitting)
3200Y
3200J
SAMPLE SEPTUM
3200L
3200A
3200D
R211
R212
3200M
3200C
3200B
3200K
INSIDE CONTAINMENT
OUTSIDE CONTAINMENT
FIT 3288
3200EE
3200F
FACADE
3200FF
3200G
PURGE EXHAUST STACK
3200Q
PURGE FILTER 1A
3200T
3200A
3200P
3200V
3200U
3200S
3200H
3200N
P707B FORCED PURGE PUMP
3200Z
PURGE FILTER 1B
3200R
3200W
PURGE EXHAUST STACK
P707A SAMPLE PUMP
WISCONSIN ELECTRIC POWER COMPANY
Point Beach Nuclear Plant
SYSTEM
DWG. NO.
MOD. REQ. NO.
ORIGINATOR
CHANGE INCORPORATED BY
DWG. NO.
REV.
DATE
FILE

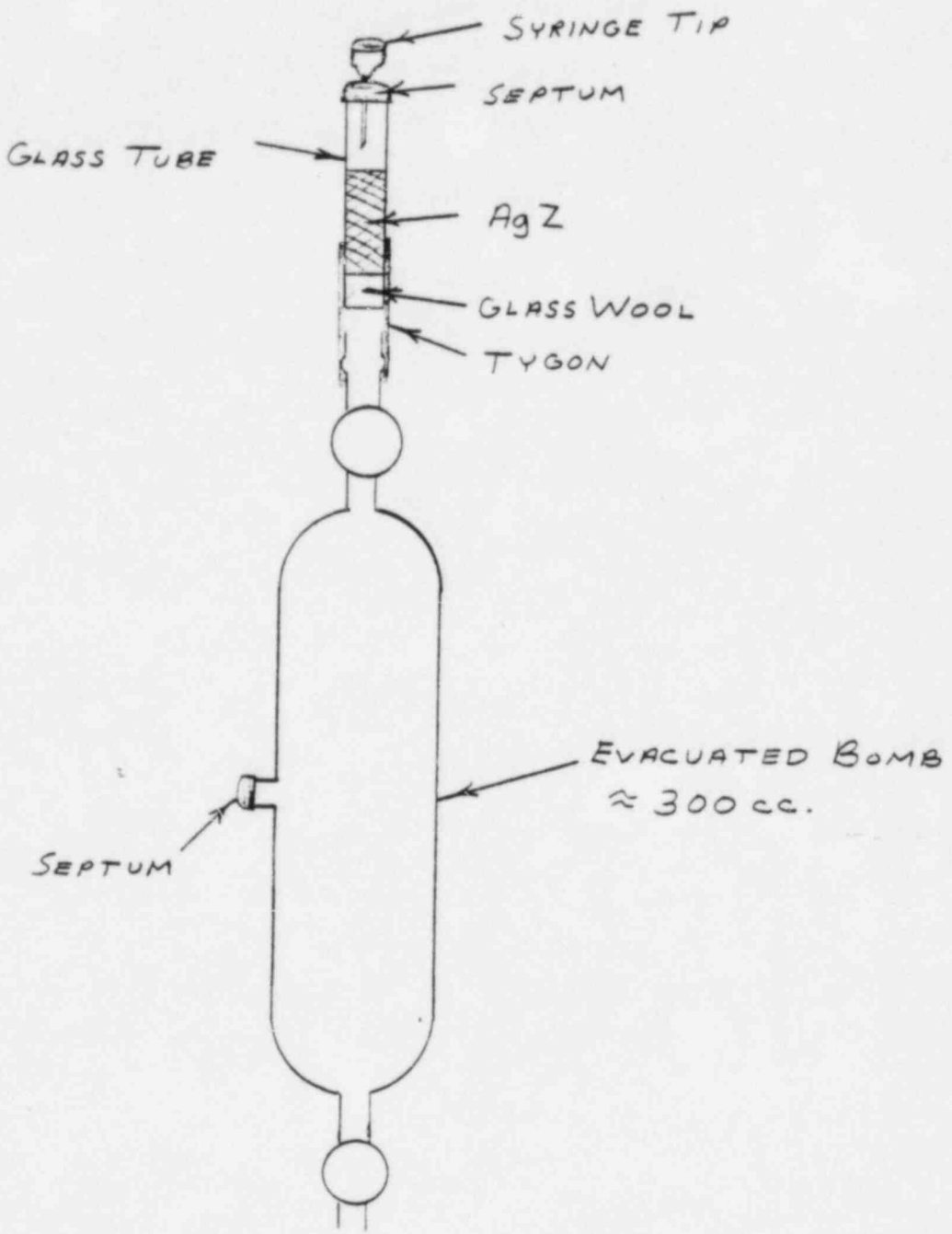

SYRINGE TIP
SEPTUM
GLASS TUBE
AgZ
GLASS WOOL
TYGON
EVACUATED BOMB
≈ 300 cc.
SEPTUM

FIG. 3

NUCLEAR ENGINEERING SECTION
NOTIFICATION AND RESPONSE

1.0 GENERAL

1.1 Establish notification responsibilities and sequence for designated Nuclear Engineering Section personnel.

1.2 Provide notification to personnel from the plant and corporate offices.

1.3 Augment the emergency organization human resources as necessary during a Point Beach Nuclear Plant condition classified as an alert, site emergency, or general emergency in accordance with the Emergency Plan Implementing Procedures.

Necessary phone numbers are included in Attachment 16.1-1, "Nuclear Engineering Section Emergency Call List."

2.0 PRECAUTIONS AND LIMITATIONS

2.1 If immediately unable to contact an individual, continue with the notification of the other individuals and then attempt to contact the persons who have not been notified.

2.2 All notifications should be appropriately logged on Attachment 16.1-1.

3.0 INITIAL CONDITIONS

Alert, site emergency or general emergency conditions exist.

4.0 PROCEDURE

4.1 Emergency Support Manager

4.1.1 Contact the Emergency Director listed on Attachment 16.1-1 and discuss the emergency classification.

4.1.2 Contact as appropriate other designated Engineering Section personnel listed on Attachment 16.1-1. Have one of the Nuclear Engineering Section personnel contact the Duty Public Information representative at 271-7117 if appropriate.

4.1.3 Report to the emergency support center and assume responsibility for operations of the emergency support center.

4.1.4 Establish a communications link with the technical support center as soon as practicable.

4.1.5 Contact INPO and inform them that we have had an emergency. Give them the classification and a short description of the incident. Also inform them that we will give them an update on conditions at the plant when more information is available. See form EPIP-23, "Offsite Agency Emergency Call List."

4.2 Emergency Director

4.2.1 Report to WE corporate headquarters and coordinate as appropriate WE general office emergency response and recovery operations in support of the plant's emergency and recovery effort.

4.2.2 Establish a communications link with the emergency support center as soon as practicable.

4.3 Designated Nuclear Engineering Section Personnel (Technical Support Center)

(See Emergency Plan Figures 5-4, 5-5, and 5-6 for individual reporting to the technical support center. This would include the Chemistry/Health Physics Supervisor and the System/Analysis & Procedural Support Coordinator.)

Report to the technical support center.

4.4 Designated Nuclear Engineering Section Personnel (Emergency Support Center)

(See Emergency Plan Figures 5-5 and 5-6 for individual reporting to the emergency support center. This would include the RadCon/Waste Manager and Radwaste/Technical Support Coordinator.

Report to the emergency support center.

ATTACHMENT 16.1-1

WE General Office	Company Ext.	Home Phone	Time Notified
Sol Burstein Executive Vice President (Emergency Director)			
C. W. Fay, Vice President-Nuclear Power (Emergency Support Manager)			
D. K. Porter (Design, Construction & Planning Manager)			
R. A. Newton (Systems, Analysis & Procedural Support Coordinator)			
G. D. Frieling (Radwaste Technical Support Coordinator)			
E. J. Lipke (Rad Con/Waste Manager)			
S. Cartwright (Utility Engineering Director)			
R. K. Hanneman			
J. Jacovitch			
D. F. Johnson			
C. W. Krause (Licensing Support Coordinator)			
S. A. Schellin			
R. D. Seizert			
T. J. Rodgers			
T. A. Hanson			
W. F. Geisheker			
W. M. Adams			

WE General Office	Company Ext.	Home Phone	Time Notified
D. M. Stevens			
G. M. Krieser			
R. E. Heiden			
D. R. Dunham			
D. B. Robinson			
W. F. Wilson			
N. H. Palmer			
D. C. Kois			
C. N. Peters			
J. E. Peters			
J. R. Donahue			
J. E. Knorr			

POINT BEACH NUCLEAR PLANT

WORKSHEET FOR STATUS REPORT ON RADIATION MONITORING SYSTEM
FOR UNIT

1. Unit Process Monitors

Monitor No.	Instrument	Reading	Comment
1R11/2RE-211	Containment Particulate Monitor		
1R12/2RE-212	Containment Gas Monitor		
1(2)R15	Steam Air Ejector		
1R16/2RE-216	Containment Fan Cooler Liquid Monitor		
1R19/2RE-219	Steam Generator Blowdown Liquid Monitor		
RMS-II Channel 3 (Unit 1)	Containment Purge Stack		
RMS-II Channel 4 (Unit 2)	Containment Purge Stack		

2. Unit Area Monitors

Monitor No.	Instrument	Reading	Comment
1R2/2RE-102	Containment El. 66'		
1R4/2RE-104	Charging Pump Hallway		
1R6/2RE-106	Primary Side Sample Room		
1R7/2RE-107	Seal Table El. 46' Containment		
1R9/2RE-109	Primary Coolant Failed Fuel		

Completed By _____ Time _____ Date _____

POINT BEACH NUCLEAR PLANT

WORKSHEET FOR STATUS REPORT ON RADIATION MONITORING SYSTEM FOR PLANT

1. Plant Process Monitors

Channel No.	Instrument	Reading	Comment
R14	Auxiliary Building Vent Stack		
R21	Drumming Area Vent Stack		
RE-225	Combined Steam Air Ejector		
RE-224	Gas Stripper Building Vent Stack		
RMS-II Channel 1	Auxiliary Building Vent Stack		
RMS-II Channel 2	Drumming Area Vent Stack		
RMS-II Channel 5	Combined Steam Air Ejector		
RMS-II Channel 6	Gas Stripper Building Vent Stack		

2. Plant Area Monitors

Channel No.	Instrument	Reading	Comment
R1	Control Room		
R3	Chemistry Lab		
R5	Spent Fuel Pit		
R8	Drumming Area		

Completed By _____ Time _____ Date _____

POINT BEACH NUCLEAR PLANT

SITE BOUNDARY CONTROL CENTER
EMERGENCY PLAN INVENTORY CHECKLIST

Item No.	Item	Required	On Hand
	Sampling Equipment and Supplies		
1.	AC generator (5,000 watt)	1	_____
3.	Electric high volume air sampler	1	_____
4.	Poly gas sample bottles	12	_____
5.	Charcoal cartridges for air sampler, high volume	48	_____
6.	Charcoal cartridges for air sampler, low volume	50	_____
7.	Silver zeolite cartridges for air sampler, low volume	5	_____
8.	Filters for air samplers (pkg. of 100)	2	_____
9.	Gasoline for AC generator (gallons)	2	_____
10.	Sample tags	50	_____
11.	Plastic bags	50	_____
12.	100' extension cord	2	_____
13.	Planchets	20	_____
13a.	High volume air sample filter	1	_____
13b.	1 qt. oil	1	_____
13c.	1 pt. OB oil	1	_____
13d.	Flask	1	_____
13e.	Dizalene	1	_____
	Respiratory Protection Equipment		
14.	Full-face respirators	4	_____
16.	Full-face filter cartridge	12	_____
	Fire Protection Equipment		
18.	Fire extinguisher, dry chemical	1	_____
	Radiation Survey and Monitoring Instrument		
19.	Jordan Radgun (.01 mR/hr - 10 kR/hr)	1	_____
20.	Radector III (.1 mR/hr - 1,000 R/hr)	1	_____
21.	Victoreen Model 490 Thyac III	1	_____
22.	PIC-6A survey instrument (1 mR/hr - 1,000 R/hr)	2	_____
23.	RM3C personnel survey frisker	1	_____
24.	Johnson Associates, GSM-5, 0-50k cpm, 0-200 mR/hr	1	_____
25.	MSC-1 sampler holder for GSM-5	1	_____
26.	Check sources; 2 - Cs-137 and 1 - Sr-90	3	_____
27.	Filters for smears (pkg. of 100)	2	_____
28.	Nuclear Chicago counter scaler	1	_____
29.	Coin envelopes (box)	1/2	_____
30.	HP-210 probe	2	_____
31.	SH4 probe holder	1	_____
32.	Earphones for Thyac III survey instrument	3	_____
33.	Side window probe	2	_____

		Required	On Hand
34.	Cord, BNC-BNC connector	2	
35.	Cord, amphenol - BNC connector	2	
35a.	HPI 1010	1	
	Personnel Monitoring Equipment		
36.	Personnel Thermoluminescent Dosimeters (TLD)	100	
37.	Radiological dosimeters, 0-5 R	12	
38.	Radiological dosimeter charger	2	
38a.	"AA" batteries, boxes	3	
	First Aid and Decontamination Supplies		
39.	First aid kit	1	
40.	Burn kit	1	
41.	Emergency drinking water tablets (bottles; 50 tables per bottle)	5	
42.	Water (gallons)	20	
43.	Decon soap, powder (5 lb.)	1	
44.	Decon soap, liquid (qt.)	1	
45.	Hand brush	4	
46.	Cotton applicators (box)	1	
47.	Potassium permanganate (4 oz.)	1	
48.	Sodium bisulfate (1 lb.)	1	
49.	Kim towels (box)	1	
50.	Masselin (pkg.)	1	
51.	"409" cleaner (btl.)	2	
52.	"Spic'n Span" (box)	2	
53.	Masselin mop	1	
54.	Regular sponge map	2	
55.	Rag mop	1	
56.	Wringer	1	
57.	Large mop bucket	1	
58.	Kimwipes (box)	1	
59.	Bucket, plastic	2	
60.	Cotton swabs (packets)	5	
61.	Gauze sponges, 2" x 2" (100 per pkg.)	1	
62.	Nail brushes	4	
62a.	Potassium Iodide tablets, bottles	4	
	Radiation Hazard Signs and Supplies		
63.	Radiation warning tape (roll)	1	
64.	Radiation placards	10	
65.	Radioactive material and radiation hazard tags	10	
66.	Radiation contamination hazard tags	10	
67.	Contamination, high radiation, radioactive material, and radiation area inserts (ea.)	10	
68.	Yellow/magenta ribbon (rolls)	8	
69.	Yellow/magenta rope (roll)	1	

		Required	On Hand
	Communication Equipment and Supplies		
70.	Portable 2-way radio KRQ-717	1	_____
71.	Telephone, plan PBX-extension with outside line capability	1	_____
72.	WE telephone book	1	_____
73.	Two Rivers/Manitowoc telephone book	1	_____
	Traffic Signs and Equipment		
74.	Traffic cones for barricades	20	_____
75.	Traffic lights for barricades	8	_____
76.	Chains and padlocks for barricades	4	_____
77.	Traffic flashlight	4	_____
78.	"Closed Area" placards	6	_____
79.	Traffic warning light batteries (spare)		_____
	Clothing and Toiletry Supplies		
79a.	Cloth hoods	25	_____
80.	Coveralls	25	_____
81.	Rainwear	6	_____
82.	Rubber boots	10	_____
83.	Shoe covers, plastic	25	_____
84.	Overshoes, winter	6	_____
85.	Gloves, rubber disposable	6	_____
86.	Gloves, cotton disposable	6	_____
87.	Mittens, winter	6	_____
88.	Towels	12	_____
89.	Washcloths	12	_____
89a.	Lineman's gloves	6	_____
89b.	Rubber gloves, boxes	1	_____
	Stationery and Miscellaneous Supplies		
90.	Desk table and chair	1	_____
91.	Writing paper (pad)	1	_____
92.	Pens and pencils	Assortment	_____
93.	Tape, masking (rolls)	2	_____
94.	Tuck tape (rolls)	10	_____
95.	Logbook	1	_____
96.	Absorbent paper (roll)	1	_____
97.	Paper cups (box)	1	_____
98.	Plastic bags	50	_____
99.	Scissors	1	_____
100.	Pocketknife	1	_____
101.	Screwdrivers (set)	1	_____
102.	Plastic funnel	4	_____
103.	Flashlight	1	_____
104.	Batteries (for flashlight and survey instruments)	50	_____
105.	Flashlight bulbs	6	_____

		Required	On Hand
Stationery and Miscellaneous Supplies, continued ...			
106.	Bulbs, incandescent	8	
107.	Electric clock	1	
108.	Electric heater	5	
109.	Wet/dry vacuum cleaner	1	
110.	Metal drum (55-gallon)	1	
111.	Dzl-lene (quart), gasonline stabilizer	1	
112.	Lead bricks	12	
113.	Safety solvent (low)	1	
114.	Metal funnels	2	
115.	Pencil sharpener	1	
116.	Chalk	1	
117.	Bulletin Board	1	
118.	Chalkboard	1	
119.	Table (reg.)	1	
120.	Picnic tables	2	
121.	Calculator	1	
	Emergency Plan Documents		
122.	PBNP Emergency Plan	1	
122a.	Emergency Plan Implementing Procedures	1	
123.	Health Physics Administrative Control Policies & Procedures Manual	1	
124.	Dose Isopleth/Map Package	1	
125.	Personnel Roster	10	
126.	Potassium Iodide Approval, Use List	1	
127.	DOE, Region V, Radiological Assistance Handbook	1	
128.	State of Wis. Peacetime Radiological Response Plan	1	
	EPIP Forms		
129.	EPIP-01, Emergency Plan Airborne Radiation Survey	5	
130.	EPIP-02, Emergency Plan Survey Record	5	
131.	EPIP-03, Dose Factor Calculation Sheet	5	
132.	EPIP-04, Status Report on Plant Systems and Controls	5	
133.	EPIP-05, Worksheet for Status Report on RMS for Unit	5	
134.	EPIP-06, Worksheet for Status Report on RMS for Plant	5	
135.	EPIP-07, X/Q Determination	5	
136.	EPIP-08, Estimated Whole Body and Thyroid Projected	5	
137.	EPIP-09, Estimated Whole Body Calculation Worksheet	5	
138.	EPIP-10, Estimated Ground Deposition Calculation	5	
139.	EPIP-17, List of Missing Personnel	5	
140.	EPIP-18, Assembly Area Roster	5	
141.	Xe-133 Equivalent Release Rate, Worksheet No. 1	5	
141a.	EPIP-36, Master Dose Logsheet	5	

		Required	On Hand
	EPIP Procedures		
142.	EPIP 1.4, Radiological Dose Evaluation	5	
143.	EPIP 1.5, Protective Action Evaluation	5	
144.	EPIP 7.1.1, Chemistry & Health Physics Personnel Notification and Initial Response when Chemistry & Health Physics Personnel are On-Site	5	
145.	EPIP 7.2.1, Activation of Health Physics Facilities at Site Boundary Control Center	5	
146.	EPIP 7.2.2, Activation of Health Physics Facilities at Operations Support Center	5	
147.	EPIP 7.2.3, Activation of Health Physics Facilities at Technical Support Center	5	
	CHP Forms		
148.	CHP-02, Iodine Airborne Survey (pad of 50)	1	
149.	CHP-21, Miscellaneous Survey (pad of 50)	1	
150.	CHP-31, Radiation Work Permit (pad of 50)	1	
151.	CHP-34, Dosimeter Rezero (pad of 50)	1	
152.	CHP-37, Irregular or Offscale Dosimeter Report (pad of 50)	1	
153.	CHP-22, Air Particulate Sample (pad of 50)	1	
154.	CHP-25, Counting Log Sheet (pad of 50)	1	
155.	CHP-33b, Visitors Monitored per 10 CFR 20 (pad of 50)	1	
156.	CHP-33c, Visitor Personnel Monitoring Record (pad of 50)	1	
157.	CHP-35, Dosimeter Summary Sheet (pad of 50)	1	
158.	CHP-38, Lost or Damaged TLD Report (pad of 50)	1	
159.	CHP-39, Personnel Contamination Report (pad of 50)	1	
160.	CHP-40, Visitor TLD Badge Issue Report (pad of 50)	1	
160a.	CHP-41, Occupational Exposure History	1	
161.	CHP-44, Timekeeping Log - High Radiation Work Location (pad of 50)	1	
162.	CHP-56, Personal Bioassay Evaluation (pad of 50)	1	
163.	CHP-106, Occupational External Radiation Exposure History (pad of 50)	1	
	Emergency Plan Sampling Kits		
164.	Emergency Plan Sampling Kits - Each kit contains the following:	2	
	1. Battery powered air sampler	1	
	2. Scott cartridge holder	1	
	3. Silver Zeolite cartridge holder	1	
	4. Stop watch with batteries	1	
	5. Air Particulate filters (env.)	1	
	6. Silver Zeolite cartridge	5	
	7. Scott charcoal cartridge	5	
	8. PIC-6A survey meter	1	
	9. Water filled ~~gas~~ sample bottle (1 liter)	2	

		Required	On Hand
10.	Liquid sample cubitainers (1 liter)	2	_____
11.	Scissors	1 pair	_____
12.	Plastic suit	2 sets	_____
13.	Gloves (surgeons)	6 pair	_____
14.	Dosimeters (0 - 5,000 mR)	2	_____
15.	Dosimeter charger	1	_____
16.	Plastic Bags		
	12 x 18 inch size	6	_____
	5 x 8 inch size	6	_____
	3 x 5 inch size	12	_____
17.	Flashlight with spare bulb and batteries	1	_____
18.	Smears (100 each/box)	2	_____
19.	Tuck Tape (roll)	1	_____
20.	Sharpie, Flair pen, grease pencil and pencil	4	_____
21.	Sample ID tags (pad)	1	_____
22.	Sampling Procedures		
	EPIP 7.3.1 Airborne Sampling and Direct Dose Rate Survey Guidelines	5 ea	_____
	EPIP 7.3.1 Atmospheric Radioactive Iodine Sample Attachment Collection and Counting	5 ea	_____
23.	Sampling Forms		
	EPIP-01 Airborne Radiation Survey Record	5 ea	_____
	EPIP-02 Emergency Plan Survey Record	5 ea	_____
	Sample Identification Survey Map	5 ea	_____
	2 and 5 Mile Sample Identification Survey Map	5 ea	_____
24.	CHP-34 Rezero Sheet	5 ea	_____
25.	9 V batteries	2 ea	_____
26.	CS source	1 ea	_____
27.	Clipboard	1 ea	_____
28.	Fuses	5 ea	_____
29.	Coin envelopes	1 pkg	_____

By _____ Date _____

Reviewed By _____ Date _____
(Health Physics Supervisor)

POINT BEACH NUCLEAR PLANT

QUARTERLY EMERGENCY PLAN CHECKLIST

DATE _____

Reference: EPIP 7.4.1 - Routine Check, Maintenance, Calibration and Inventory of Schedule of Health Physics Emergency Plan Equipment

EPIP 7.4.2 - Emergency Plan Equipment Routine Checks, Maintenance and Calibration Instructions

SITE BOUNDARY CONTROL CENTER

RESPIRATORY EQUIPMENT

Item No.	Type	Serial No.	Inspection
1.	Full-face	_____	_____
2.	Full-face	_____	_____
3.	Full-face	_____	_____
4.	Full-face	_____	_____

COMMUNICATIONS

Portable Radio — Functional check with control room _____

WARNING LIGHTS, TRAFFIC

Traffic Warning Lights — All traffic warning lights functioning _____

AC GENERATOR (Gasoline Powered)

Functional Test _____

DRY CELL BATTERY REPLACEMENT (For SBCC, Control Room, TSC, OSC, ESC and Two Rivers Hospital)

NOTE: If alkaline batteries are used, battery changeout is required annually rather than quarterly. If carbon or mercury batteries are used, a quarterly 5-minute test shall be completed to verify operability.

Item No.	Type of Equipment	Battery Type	Changed/ Quantity	Tested	Date Due
1.	Traffic Warning Light				
2.	Survey/Frisker Instruments				
3.	Flashlights				
4.	Portable Radio				
5.	Stop Watch				
6.	Dosimeter Charger				

CONTROL ROOM

RESPIRATORY EQUIPMENT

Item No.	Type of Equipment	Serial Number	Inspection	Functional Test
1.	Bio-Pak			
2.	Bio-Pak			
3.	MSA-SCBA			
4.	MSA-SCBA			
5.	Supplied Air Mask			
6.	Supplied Air Mask			
7.	Supplied Air Mask			
8.	Supplied Air Mask			
9.	Supplied Air Mask			
10.	Supplied Air Mask			
11.	Supplied Air Mask Hose			
12.	Supplied Air Mask Hose			
13.	Supplied Air Mask Hose			
14.	Supplied Air Mask Hose			
15.	Supplied Air Mask Hose			
16.	Supplied Air Mask Hose			
17.	Supplied Air Valve			
18.	Supplied Air Valve			
19.	Supplied Air Valve			
20.	Supplied Air Valve			
21.	Supplied Air Valve			
22.	Supplied Air Valve			

Control Room Respiratory Equipment, continued ...

Item No.	Type of Equipment	Serial Number	Inspection
23.	Supplied Air Hose	_____	_____
24.	Supplied Air Hose	_____	_____
25.	Supplied Air Hose	_____	_____
26.	Supplied Air Hose	_____	_____
27.	Supplied Air Hose	_____	_____
28.	Supplied Air Hose	_____	_____
29.	Spare Mask	_____	_____
30.	Spare Mask	_____	_____
31.	Spare Mask	_____	_____
32.	Spare Mask	_____	_____
33.	Bio-Pak	_____	_____
34.	Bio-Pak	_____	_____
35.	Bio-Pak	_____	_____
36.	Bio-Pak	_____	_____

TECHNICAL SUPPORT CENTER/OPERATIONS SUPPORT CENTER

RESPIRATORY EQUIPMENT

Item No.	Type of Equipment		Serial Number	Inspection		Serial Number	Inspection
1.	Clear-Vue	1.	_____	_____	4.	_____	_____
		2.	_____	_____	5.	_____	_____
		3.	_____	_____	6.	_____	_____
2.	Ultra-Vue	1.	_____	_____	4.	_____	_____
		2.	_____	_____	5.	_____	_____
		3.	_____	_____	6.	_____	_____
3.	Bio-Pak	1.	_____	_____	6.	_____	_____
		2.	_____	_____	7.	_____	_____
		3.	_____	_____	8.	_____	_____
		4.	_____	_____	9.	_____	_____
		5.	_____	_____	10.	_____	_____

COMMUNICATIONS

Portable Radio (2 units) — Functional Test with Control Room _____

EMERGENCY SUPPORT CENTER

RESPIRATORY EQUIPMENT

Item No.	Type of Equipment	Serial Number	Inspection	Serial Number	Inspection
1.	Clear-Vue	1. _____	_____	4. _____	_____
		2. _____	_____	5. _____	_____
		3. _____	_____	6. _____	_____
2.	Ultra-Vue	1. _____	_____	4. _____	_____
		2. _____	_____	5. _____	_____
		3. _____	_____	6. _____	_____

TWO RIVERS COMMUNITY HOSPITAL

RESPIRATORY EQUIPMENT

Item No.	Type of Equipment	Serial Number	Inspection
1.	Clear-Vue	1. _____	_____
		2. _____	_____
		3. _____	_____
		4. _____	_____
2.	Ultra-Vue	1. _____	_____
		2. _____	_____
		3. _____	_____
		4. _____	_____

REMARKS: _____

_____

_____

_____

_____

NOTE: Include maintenance request numbers for all items requiring repairs.

Inventory By _____ Date _____

Reviewed By _____ Date _____

POINT BEACH NUCLEAR PLANT

SEMI-ANNUAL & ANNUAL EMERGENCY PLAN CHECKLIST

DATE _____

Reference: EPIP 7.4.1 - Routine check, Maintenance, Calibration and Inventory of Schedule of Health Physics Emergency Plan Equipment

EPIP 7.4.2 - Emergency Plan Equipment Routine Checks, Maintenance and Calibration Instructions

SITE BOUNDARY CONTROL CENTER

AIR SAMPLERS

Item No.	Type	Preventive Maintenance	Flow Rate Calibration
1.	High Volume (115 V AC)	_____	_____
2.	DC Battery Powered	_____	_____

DOSIMETERS

Pocket Dosimeters

Drift/Response Checked

Date Last Completed _____

Date Due _____

TLD's

TLD's Changed*

Date Changed _____

Date Due _____

*Includes TLD's from emergency vehicle.

RESPIRATORY EQUIPMENT

Item No.		Serial Number	Functional Test	Periodic Maintenance
1.	Bio-Pak			

EMERGENCY SUPPORT CENTER

AIR SAMPLERS

Item No.	Type	Preventive Maintenance	Flow Rate Calibration
1.	Low Volume (115 V AC)		

DOSIMETERS

Pocket Dosimeters — Drift/Response Checked

Date Last Completed _____

Date Due _____

SOUTH GATE

AIR SAMPLERS

Item No.	Equipment	Preventive Maintenance	Flow Rate Calibration
1.	Low Volume		

CONTROL ROOM

DOSIMETERS

Pocket Dosimeters — Drift/Response Checked

Date Last Completed _____

Date Due _____

RESPIRATORY EQUIPMENT

Item No.	Type of Equipment	Serial Number	Inspection	Functional Test	Periodic Maintenance
1.	Bio-Pak				
2.	Bio-Pak				
3.	Bio-Pak				
4.	Bio-Pak				
5.	Bio-Pak				
6.	Bio-Pak				
7.	MSA SCBA				N/A
8.	MSA SCBA				N/A
9.	Supplied Air (Comp. Unit)	/			N/A N/A
10.	Supplied Air (Comp. Unit)	/			N/A N/A
11.	Supplied Air (Comp. Unit)	/			N/A N/A
12.	Supplied Air (Comp. Unit)	/			N/A N/A
13.	Supplied Air (Comp. Unit)	/			N/A N/A
14.	Supplied Air (Comp. Unit)	/			N/A N/A

TWO RIVERS COMMUNITY HOSPITAL

DOSIMETERS

Pocket Dosimeters

Drift/Response Checked

Date Last Completed _____

Date Due _____

REMARKS: _____

_____

_____

_____

_____

Checked By _____ Date _____

Reviewed By _____ Date _____
Health Physics Supervisor

POINT BEACH NUCLEAR PLANT

CALCULATION OF Xe-133 EQUIVALENT RELEASE RATES

Responsibility - Shift Supervisor or designee.
Frequency - During classification only.

1.0 LOW RANGE OPERATIONAL VENT STACK READINGS

	Flow Rate (cfm)	Meter Reading (μCi/cc or cpm)		Conversion Factor (Curies/sec)		Release Rate
Auxiliary Building	61400	_____	x	5.8×10^{-9}	=	_____
Drumming Area	43100	_____	x	1.3×10^{-8}	=	_____
Gas Stripper Building	13000	_____	x	6.2	=	_____
Combined Air Ejector	25	_____	x	1.6×10^{-2}	=	_____

2.0 EBERLINE RMS-II VENT STACK READOUTS

	Flow Rate (CFM)	Meter Reading (R/hr)		Conversion Factor $\frac{\text{Curies - Hrs}}{\text{sec-R}}$		Release Rate (Curies/sec)
Auxiliary Building	61400	_____	x	3.0×10^{3}	=	_____
Drumming Area	43100	_____	x	2.1×10^{3}	=	_____
Gas Stripper Building	13000	_____	x	6.2×10^{2}	=	_____
Combined Air Ejector	25	_____	x	3.4	=	_____

3.0 PLANT EFFLUENT VENT STACK CONTACT READINGS

	Flow Rate (CFM)	Meter Reading (R/hr)		Conversion Factor $\frac{\text{Curies-hr}}{\text{sec-R}}$		Release Rate (Curies/sec)
Auxiliary Building	61400	_____	x	3.0×10^2	=	_____
Drumming Area	43100	_____	x	2.3×10^2	=	_____
Gas Stripper Building	13000	_____	x	8.0×10^4	=	_____
Combined Air Ejector	25	_____	x	1.6×10^2	=	_____

	Estimated Steam Release (lb/hr)	x	Specific Volume (ft^3/lbm)	x	Conversion Factor $\frac{\text{hr-cm}^3}{\text{sec-ft}^3}$	x	Meter Reading (R/hr)	X	Conversion Factor $\frac{\text{Curies-hr}}{\text{cm}^3\text{-R}}$	=	Release Rate Ci/sec
Main Steam Header	_____	x	_____	x	7.86	x	_____	x	8.0×10^{-1}	=	_____

Assume 1000 psia steam which will give a conservative specific volume. At 1000 psia specific volume = .446 ft^3/lbm. Steam generator safety valve rating is 8.33×10^5 lb/hr per valve. Atmospheric relief valve capacity is 3.3×10^4 lb/hr with both valves open.

4.0 ESTIMATE OF GROSS Xe-133 EQUIVALENT RELEASE RATES

Vent	Xe-133 Equivalent Release Rate (Curies/sec)
Auxiliary Building	
Drumming Area	
Gas Stripper Building	
Combined Air Ejector Decay Duct	
Main Steam Header	
TOTAL	

Completed By _____ Date _____ Time _____