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BEAVER VALLEY POWER STATION EMERGENCY PREPAREDNESS PLAN
(Operations Manual Chapter 57 - Implementing Procedures)

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E.P.P. Approval
CHAPTER 57

EMERGENCY IMPLEMENTING PROCEDURES

VOLUME II

Rev. No.	Pages Issued	OSC Review Date	Approval Signature	Approval Date	Effective Date
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Issue 6 Rev. 1	EPP/I-1 - Attachment 3, TAB 1; /IP-1.1 - All Pages; /IP-1.2 - Page 6; /IP-1.4 - Attachments 1 & 2; /IP-1.5 - Attachment 1; /IP-1.5.1 - All Pages; /IP-2.1 - All Pages; /IP-2.2 - All Pages; /IP-2.3 - All Pages; /IP-2.6 - Pages to TABS 2 & 10; /IP-3.1 - Pages 11 & 12; /IP-3.3 - All Pages; /IP-3.4 - All Pages; /IP-5.4 - All Pages; /IP-6.2 - All Pages; /IP-7.2 - All Pages; /IP-9.1 - All Pages.	9/17/80	J A Werling	9/22/80	9/26/80
Issue 6 Rev. 2	EPP/IP-2.6 - Attachment 2 & 3 of TAB 7; EPP/IP-3.1.1, All Pages; EPP/IP-7.1, All Pages.	12/19/80	H P Williams	12/29/80	12/31/80
Issue 6 Rev 3	ALL	2/19/81	J A Werling	2/20/81	3/2/81
Issue 6 Rev. 4	ALL	10/28/81	H P Williams	11/4/81	12/1/81

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REVIEW AND REVISION OF THE EMERGENCY PREPAREDNESS PLAN

E.P.P. Approval
Chapter 57

EMERGENCY IMPLEMENTING PROCEDURES

VOLUME II

Rev. No.	Pages Issued	OSC Review Date	Approval		Effective Date
			Signature	Date	
Issue 6 Rev 5	EPP/IP 1.1 - Attachment 2 /IP-1.2 - Attachment 5 /IP-1.2.1 - All Pages /IP-1.3 - All Pages /IP-2.1 - Attachment 1 & 6 /IP-2.2 - Attachment 2 /IP-2.6 - Pages 1 thru 7, Tabs 2,6,7,11 /IP-3.3 - All Pages /IP-3.4 - All Pages /IP-3.1.1 - All Pages /IP-5.4 - All Pages	2/10/82	HP Williams	2/10/82	2/12/82
Issue 7 Rev 0	ALL	8/23/82	Wm S Lacey	9/13/82	9/15/82

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DUQUESNE LIGHT COMPANY
Beaver Valley Power Station

9/15/82
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Manual Transmittal

Please make the following changes to:

Manual: Operating Chapter: E.P.P Issue: 7 Revision: 0

Title: Emergency Preparedness Plan (Volume II)

Filing Instructions			
Remove		Insert	
Section	Page	Section	Page
all	all	all	all
RETAIN TABS (if any)		INSERT TABS (if any)	

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2. Unusual Event

3. Alert

4. Site Area Emergency

5. General Emergency

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1.2 Communications and Dissemination of Information

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2.3 Offsite Monitoring for Airborne Release

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- 3.2 Personnel Accountability
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- 3.4 Emergency Respiratory Protection
- 3.5 Traffic and Access Control

EPP/IP 4 series--Offsite Protective Actions

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- 5.2 Handling of Contaminated/Irradiated Personnel Injuries
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- 9.1 Emergency Public Information Plan--BVPS
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Annex B -	Crucible INC Nuclear Emergency Plan
Annex C -	Radiation Emergency Plan for the Mackintosh-Hemphill Midland Plant
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Annex F -	Reserved
Annex G -	Derivation of EPP/IP Numerical Values
Annex H -	Emergency Response Center Directory
Annex X -	Records Transmittal for Controlled Copies of EPP

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Instruction

RECOGNITION AND CLASSIFICATION OF EMERGENCIES

A. OBJECTIVE

This instruction describes the immediate actions to be taken to recognize and classify an emergency condition. The data sheets attached to this instruction identify the four emergency classifications, the initiating event(s) and emergency action levels for each classification and where applicable, the specific instruments and indications used to detect and classify the event.

The Emergency Director (Shift Supervisor, until properly relieved by a designated alternate) has the responsibility and authority for implementation of the actions prescribed in this instruction.

B. PREREQUISITES/INITIAL CONDITIONS

An off-normal event, corresponding to one of the initiating events described herein, has occurred.

C. PRECAUTIONS

1. Continued surveillance and assessment of plant conditions are necessary to ensure that the emergency classification is appropriately revised as conditions change, or as more definitive information is obtained.
2. Emergency Action Levels (EALs) are specified in the Tabs to this procedure, in the BVPS EPP, in Table 4.1 of the EPP, and in Attachment 1 to this EPP/Instruction. Table 4.1 and Attachment 1 are summaries, and should be used as a guide, and not as, final cirteria. Changes are made to this EPP/Instruction as often as is necessary, while the BVPS EPP is required to be revised only annually. For this reason, THE EALs SPECIFIED IN THE TABS TO THIS PROCEDURE HAVE PRECEDENCE OVER OTHER EALs should a conflict between EALs be noted.

3. This EPP/Instruction and the EPP do not address every Licensee Event Resport (LER) reporting requirements. Thus, although the EPP may not be required to be activated, notification of the USNRC may still be required within one hour after discovery of the event. Refer to step 5 of this instruction.

D. GUIDANCE AND CRITERIA

1. Definitions

1.1 Emergency Action Levels -- Numerical or qualitative values for the operational or radiological parameters, which when exceeded, require assessment and verification of the condition and may require the implementation of the Beaver Valley Power Station Emergency Preparedness Plan.

1.2 Emergency Condition -- An occurrence, or combination of occurrences, which falls into one of the following classifications:

a. Unusual Event -- Off-normal events which do not, by themselves, constitute significant events, but some of which could indicate a potential degradation in the level of safety of the plant.

b. Alert -- Events which indicate an actual degradation in the level of safety of the plant.

c. Site Area Emergency -- Events which involve actual or likely major failures of plant functions needed for the protection of the public.

d. General Emergency — Events which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. (Loss of two of three fission product barriers with potential for imminent loss of the third.)

2. Recognition

2.1 Attached to this instruction are data sheets to be used in classifying emergency conditions. Each data sheet identifies the initiating event (ie: RCS Presure Hi/Low), and the respective emergency action levels (EALs) for each emergency classification, as applicable. Identified with each EAL is a representative listing of the various instruments and other indications which may be symptoms of an emergency, or which could be used to access and classify the condition.

NOTE

The process variables referred to in this instruction and on the data sheets are typically monitored by more than one instrument channel. The redundant channels should be checked for consistency while verifying and assessing the emergency condition.

2.2 The emergency action levels, may not signify the need for immediate notification of offsite authorities, activation of the TSC, or implementation of protective measures, but rather, signify the need for implementation of dose assessment measures onsite and/or offsite and assessment of plant status, as applicable. In many cases, the proper classification will be immediately apparent from in-plant instrumentation. In other cases, more extensive assessment is necessary to determine the applicable emergency classification.

2.3 Table 1 (Attachment 1) demonstrates how an initiating condition leads directly to the appropriate emergency classificaiton, based on the magnitude of the event. Table 1 also illustrates that a particular initiating event and related EALs need not apply to all emergency classifications. The plant operating staff should consider the effect of the combinations of initiating events that individually constitute lower classificaiton emergency conditions, but may exceed the criteria for a higher classification emergency condition when they concur concurrently or in sequence.

2.4 Table 2 (Attachment 2) lists the accidents/events identified in the BVPS FSAR Accident Analysis Chapter. For each of these accidents, the emergency classification corresponding to the postulated accident outcome is identified. Plant operating personnel should use this table as a guide only, as it is unlikely that the actual accident conditions will be the same as those analyzed and that higher or lower emergency classificaitons may be warranted.

3. Classification

3.1 The BVPS Emergency Director shall declare the appropriate emergency condition as soon as the event has been indicated and verified. This verification must be performed as soon as possible and subject to the following criteria:

3.1.1 Alert

All reasonable efforts shall be implemented to make this verificcation promptly (if possible, within 15 minutes of the initial indication of the event).

3.1.2 Site Are Emergency

All reasonable efforts shall be implemented to make this verification promptly (if possible, within 15 minutes of the initial indication of the event).

3.1.3 General Emergency

For indications based on actual releases of radiological effluents, or other readily apparent conditions, the verificaiton time shall not exceed 15 minutes. For less apparent indications, the Emergency Director should ensure that an appropriate Alert or Site Area Emergency is in effect and determine the applicability of a General Emergency as soon as possible.

3.2 In the Unusual Event classification, numerous EALs are related to limiting conditions for operations (LCO). In these cases, the EAL is not exceeded, an an emergency does not exist, if the appropriate corrective action for exceeding the LCO (specified inthe Technical Specifications) has been taken. The EAL is exceeded and an unusual event has occurred, however, if the event results in a forced shutdown by the LCO.

E. PROCEDURE

NOTE

Perform the steps below concurrent with the implementation of appropriate corrective measures and other provisions of the Emergency Operating Procedures (EOPs) Chapter 53.

1. Verify the initial indication (alarm, surveillance report, etc) by comparison to redundant instrument channels, comparison to other related plant parameters, physical observations, and field measurements, as applicable.
2. Locate the appropriate data sheet in Attachment 3. Data sheets are arranged by initiating event. These initiating events can be either a single plant parameter (ie: RCS Pressure Hi/Low) or may be the consequence of abnormal parameters (ie: Fuel Clad Degradation).
3. Determine the appropriate emergency classification, by comparing the verified plant parameters to the EALs for each emergency condition. Be careful to distinguish between the specified EAL and the specified symptoms when making this determination.

4. Declare the appropriate emergency condition. Perform additoinal actions in accordance with the EOPs and the appropriate EPP/Instruction:

   4.1 EPP/I-2 "Unusual Event"
   4.2 EPP/I-3 "Alert"
   4.3 EPP/I-4 "Site Area Emergency"
   4.4 EPP/I-5 "General Emergency"

5. If the observed abnormal condition does not match a specified EAL in this procedure, compare the plant status and/or the abnormal event to the generic emergency classificaitons as defined inparagraph D.1.2 of this procedure, and if appropriate, classify the abnormal condition accordingly.

6. If the abnormal condition does not constitute an Unusual Event, continue corrective actions in accordance with the BVPS Operating Manual and resume normal operations. If the event is not classified as an Unusual Event, but is reportable to the NRC pursuant to OM Chp 48 Section 9.D, DLC PID should be notified of the event for a possible press release. If station management deems it appropriate, a courtesy call should be made to the primary offsite agencies (BCEMA, PEMA, CCDSA, AND HCOES) on a timely basis consistent with normal working hours. (This action is requested since the NRC or others may modify the offsite agencies, even though an emergency does not exist.)

7. Assessment actions shall be continued, and if necessary, the emergency classification escalated (or downgraded) as more definitive information becomes available of if plant conditions change significantly.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.

2. Beaver Valley Power Station Operating Manual

3. Title 10, Code of Federal Regulations Part 50, Appendix E

4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation or Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

G. ATTACHMENTS

1. Table 1, Action Level Criteria for Classification of Emergency Conditions

2. Table 2, FSAR Postulated Accident Classificaitons

3. Data Sheets for Classification of Emergency Conditions

TABLE 1

ACTION LEVEL CRITERIA FOR CLASSIFICATION OF EMERGENCY CONDITIONS

INITIATING CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
	Off-normal Events Which Could Indicate a Potential Degradation of the Level of Safety of the Plant	Events Which Indicate an Actual Degradation of the Level of Safety of the Plant	Events Which Involve Actual or Likely Major Failures of Plant Functions Needed for Protection of the Public	Events Which Involve Actual or Imminent Substantial Core Degradation or melting with Potential for Loss of Containment Integrity
Radioactive Effluent Applicable to Any Release Point(s) and Resulting from Any Initiating Event TAB 1	Release Exceeds Tech Spec Limit; Unplanned or Unmonitored Releases suspected of exceeding Tech Spec Limit	Release Exceeds 100 Times Instantaneous Tech Spec Limit; Unplanned or Unmonitored Releases Suspected of Exceeding 100 times Tech Spec Limit	Release Corresponds to >20 mrem/hr at Site Boundary -or- Off-site Dose Due to Event is Projected to Exceed 170 mrem to Whole Body or Child Thyroid	Release Corresponds to >600 mrem/hr to Whole Body at Site Boundary -or- Off-site Dose Due to Event is Projected to Exceed 5 rem to Whole Body or 25 rem to the Child Thyroid
Release or Loss of Control of Radioactive Material Within the Plant TAB 2	→	Fuel Handling Accident Resulting in Release of Radioactivity to Occupied Areas Such That the Direct Radiation Levels in the Areas Increase by a Factor of >1000 -or- Other Verified, Uncontrolled Events Which Result in an Unexpected Increase of In-Plant Direct Radiation Levels by a Factor of >1000	Major Damage to Spent Fuel Due to Fuel Handling Accident -or- Uncontrolled Decrease in Fuel Pool Water to Below Level of Fuel	

TABLE 1 ACTION LEVEL CRITERIA FOR CLASSIFICATION OF EMERGENCY CONDITIONS

INITIATING CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
Reactor Coolant System (RCS) Temperature Low TAB 3	Below Tech Spec Limiting Conditions for Operation (LCO)			Loss of 2 of 3 Fission Product Barriers With a Potential Loss of Third Barrier <u>Applicable to Any Initiating Event that May Lead to this Condition.</u> -or- Any Initiating Events, from Whatever Source that Makes Release of Large Amounts of Radioactivity in a Short Time Probable, For Example: 1. LOCA With Failure of ECCS 2. LOCA With Initially Successful ECCS. Subsequent Failure of Heat Removal Systems With Likely Failure of Containment 3. Loss of All Onsite and Offsite Power Concurrent With Total Loss of Emergency Feedwater 4. Loss of Feedwater and Condensate Followed by Failure of Emergency Feedwater System 5. Reactor Protection System Fails to Initiate or Complete a Required Scram, Followed by Loss of Core Cooling and Make-up Systems -or- Loss of Plant Control Occurs
RCS Pressure High TAB 4	Exceeds LCO Limit			
RCS/Containment Leak TAB 5	Exceeds LCO	Exceeds 50 gpm	Exceeds Make-up Capacity	
RCS/Secondary Leak TAB 6	Exceeds LCO	>200 gpm -or- >10 gpm w/ MSL Break -or- MSL Break w/ MSIV Failure	>50 gpm w/ MSL Break w/Indication of Fuel Failure -or- >1000 gpm	
Main Steam Line Break TAB 7	→			
Fuel Cladding Degradation TAB 8	RCS Activity Exceeds LCO -or- Reactor Coolant Monitor Alarm, or analyses >1 µCi/gm, Steady State	RCS ^{131}I Activity >300 µCi/gm	Degraded Core—Possible Loss of Coolable Geometry	
RCS Safety or Relief Valve Failure TAB 9	Leak Exceeds LCO or Valve Inoperable			
RCS Temperature High TAB 3	Exceeds LCO			
RCS Pressure Low TAB 4	Below LCO			
Initiation of ECCS TAB 10	Valid Safety Circuit Trip or Necessary Manual Initiation			
RCS Pump Failure TAB 11	→	Impeller Seizure		
Loss of Containment Integrity TAB 12	Requiring Shutdown by LCO		Containment Pressure >5 & <45 psig	

TABLE 1 ACTION LEVEL CRITERIA FOR CLASSIFICATION OF EMERGENCY CONDITIONS

INITIATING CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
Loss of Engineered Safety or Fire Protection Features TAB 13	Requiring Shutdown by LCO	→	→	Loss of 2 of 3 Fission Product Barriers With a Potential Loss of Third Barrier Applicable to Any Initiating Event that May Lead to this Condition. -or- Any Initiating Events, from Whatever Source that Makes Release of Large Amounts of Radioactivity in a Short Time Probable, For Example: 1. LOCA With Failure of ECCS 2. LOCA With Initially Successful ECCS. Subsequent Failure of Heat Removal Systems With Likely Failure of Containment 3. Loss of All Onsite and Offsite Power Concurrent With Total Loss of Emergency Feedwater 4. Loss of Feedwater and Condensate Followed by Failure of Emergency Feedwater System 5. Reactor Protection System Fails to Initiate or Complete a Required Scram, Followed by Loss of Core Cooling and Make-up Systems -or- Loss of Plant Control Occurs
Failure of Reactor Protection System to Initiate or Complete a Scram TAB 14	→	Reactor Not Subcritical after Valid Scram Signal(s)	→	
Loss of Plant Control/Safety Systems TAB 15	→	Loss of Capability to Achieve Cold Shutdown	Loss of Capability to Achieve Hot Shutdown	
Loss of Indicators, Annunciators or Alarms TAB 16	Loss on Process or Effluent Parameters, Requiring Shutdown by LCO	Loss of All Alarms (Annunciators) Sustained for 5 mins	Loss of All Alarms >15 min with Plant Not in Cold S/D -or- Plant Transient Occurs While All Alarms are Lost	
Control Room Evacuation TAB 17	→	Required or Anticipated. Control of Shutdown Systems Established at Remote Shutdown Panel	Required. Shutdown System Control at Remote Shutdown Panel Not Established Within 15 min	
Toxic or Flammable Gases TAB 18	Near-by or On-site Release Potentially Harmful	Enters Facility. Potential Habitability Problems	Enters Vital Areas and Restricts Necessary Access	
Security Compromise TAB 19	In Accordance with Security Plans		Imminent Loss of Physical Control of Plant	
Loss of On-site AC Power TAB 20	Loss of Capability	Temporary Loss of Both	Loss of Both Exceeds 15 minutes	
Loss of All Off-site Power TAB 20	Upon Occurence			
Loss of All On-site DC Power TAB 21	→	Upon Occurence	Loss of Vital DC Power For More than 15 min	
Tornado TAB 22	Warning. Probable Effect on Station	Strikes Vital Plant Structures	Winds in Excess of Design Levels	

TABLE 1 ACTION LEVEL CRITERIA FOR CLAS CATION OF EMERGENCY CONDITIONS

INITIATING CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
Flood or Low Water TAB 23	Flood <705 feet MSL, Requiring S/D. Low Water <LCO	Flood >705 feet MSL	Flood >735 feet MSL -or- Damage to Vital Equipment	Loss of 2 of 3 Fission Product Barriers With a Potential Loss of Third Barrier Applicable to Any Initiating Event that May Lead to this Condition. -or- Any Initiating Events, from Whatever Source that Makes Release of Large Amounts of Radioactivity in a Short Time Probable, For Example: 1. LOCA With Failure of ECCS 2. LOCA With Initially Successful ECCS. Subsequent Failure of Heat Removal Systems With Likely Failure of Containment 3. Loss of All Onsite and Offsite Power Concurrent With Total Loss of Emergency Feedwater 4. Loss of Feedwater and Condensate Followed by Failure of Emergency Feedwater System 5. Reactor Protection System Fails to Initiate or Complete a Required Scram, Followed by Loss of Core Cooling and Make-up Systems -or- Loss of Plant Control Occurs
Earthquake TAB 24	Detected on Site Seismic Instrumentation	Greater than OBE Occurs	Greater than SSE Occurs	
Fire TAB 25	Within Plant, Not Under Control in 10 Minutes After Fire Fighting Commenced	Potentially Affecting Safety Systems.	Affecting Safety Systems Required for Shutdown	
Explosion TAB 26	Near or On-site Explosion Potential Significant Damage	Known Damage to Facility, Affecting Operation	Severe Damage to Safe Shutdown Equipment	
Aircraft TAB 27	Unusual Activity Over Facility -or- Aircraft Crashes Onsite	Aircraft or Missile From Whatever Source Strikes and Significantly Degrades a Station Safety Structure	Crash Affects Vital Structures by Impact or Fire	
Train TAB 28	Derailment in Onsite Areas			
Watercraft TAB 28	Strikes Intake Structure, Resulting in Flow Reduction			
Contaminated Injury TAB 28	Transportation of Injured and Contaminated Individual(s) to Offsite Hospital			
Accident at SAPS TAB 28	Requires Protective Actions at BVPS			
Oil Pipeline Rupture TAB 28	Rupture of Pipeline Onsite w/ or w/o Fire			
Turbine [illegible]re TAB 28	Penetration of Casing			

Table 2

FSAR POSTULATED ACCIDENT CLASSIFICATIONS

ACCIDENT	EMERGENCY CLASSIFICATION
Fuel Handling Accident	General Emergency (maximum)
Accidental Release of Waste Liquid	Unusual Event
Rupture of VCT	Site Emergency
Rupture of GST	Alert
Steam Generator Tube Tupture (w/offsite power)	Alert
Steam Generator Tube Tupture (w/o offsite power)	Site Emergency
Main Steam Line Break in Containment	Site Emergency
Main Steam Line Break Outside Containment	Alert
Main Feedwater Pipe Rupture	Alert
Rod Cluster Control Assembly Ejection	Site Emergency
Single RCS Pump Locked Rotor	Alert
Complete Loss of Coolant Flow	Unusual Event
Single RCCA Withdrawal at Full Power	Unusual Event
Loss of Coolant Accident	General Emergency

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NOTE

For monitored effluent paths with automatic discharge isolation (or diversion*), the occurence of a monitor alarm does not constitute a release in excess of Technical Specificaiton-PROVIDED--the automatic valve properly isolated or diverted the effluent release path. Appropriate samples should be taken to verify the monitor reading. If the discharge does not isolate, consider the release to be "unplanned" and take appropriate action as specified below.

*eg; main condenser air ejector diverted from atmosphere release point to containment.

UNUSUAL EVENT

1. Monitored Release Exceeds Technical Specification

A radioactivity release in excess of MPC limits for an isotopic mix in a liquid release; or in excess of the Environmental Technical Specification (ETS 2.4) for a gaseous release.

NOTE

The specific MPC limit for a given batch release (liquid or gaseous) is based on prior sampling results which are documented onthe Radioactive Waste Discharge Authorization (RWDA). If a Hi-Hi alarm occurs on one of the instruments listed below, a sample should be taken of the affected effluent path (tank or monitor sample, as applicable) and the results compared to the pre-discharge sample results. If the sample results differ significantly, a new RWDA shall be calculated. If the sum of the individual MPC fractions exceed 1.0, the release exceeded technical specificaitons. Similar assessment can be performed for continuous release pathways using the last periodic sample results.

Instrument	Description	Alarm
RW-1LW-104	Liquid Waste Effluent Monitor	Hi-Hi
RW-1LW-116	Liquid Waste Contaminated Drains	Hi-Hi
RM-1GW-108A	Gaseous Waste, Particulate	Hi-Hi
RM-1GW-108B	Gaseous Waste, Gas	Hi-Hi
RM-1VS-101A	Ventilation Vent, Particulate	Hi-Hi
RM-1VS-101B	Ventilation Vent, Gas	Hi-Hi
RM-1VS-107A	Elevated Release, Particulate	Hi-Hi
RM-1VS-107B	Elevated Release, Gas	Hi-Hi

2. Unplanned or Unmonitored Release

Any liquid or gaseious radioactivity release via an unmonitored path; or an unplanned release via a monitored path; either of which is estimated or suspected to exceed 10 CFR 20 Appendix B limits following dilution. If an isotopic breakdown is not available, the MPC limit is 1 E-7 μCi/cc gross beta-gamma and/or 1E-3 μCi/cc tritium following dilution (≈river activity).

RADIOACTIVE EFFLUENT

ALERT

1. Monitored Release-Liquid

A liquid release estimated or suspected to exceed 12 times the EPA Primary Drinking Water Standards-attributable to the Station. (See EPP/IP-2.7 "Liquid Release Determination". (12 times EPA is the limit established by DER/BRP in the "Plan for Nuclear Generating Station Incidents")

2. Monitored Release-Gaseous

A gaseous release estimated or suspected to exceed 100 times the gaseious release technical specification (ETS 2.4). The monitors listed below and the setpoints correspond to 100 times the gaseous release limit for a conservative radionuclide mix. These monitors are installed in parallel to the identified monitors and are readout locally on the SPING-4 Control Room Terminal (CT-1), and locally, if necessary

Monitor #	100 X TS, cpm
RM-1VS-111 (Lo Range)	7.4 E3
RM-1VS-112 (Lo Range)	3.8 E4
RM-1GW-110 (Hi Range)	8.6 E3

Based on: 1000 ft^3/min flow via GW-108 path
49300 ft^3/min flow via VS-107 path
60000 ft^3/min flow via VS-101 path

$$\frac{\text{New Flow}}{\text{Old Flow}} \times \text{EAL} = \text{New EAL}$$

3. Unplanned or Unmonitored Release

Any liquid radioactivity release via an unmonitored path; or an unplanned release via a monitor path; estimated or calculated to result in water treatment plant intake activity in excess 12 times the EPA Drinking Water Standards.

Any airborne activity release via an unmonitored path; or an unplanned release via a monitored path; calculated or estimated to 100 times technical specification (Instantaneous).

SITE EMERGENCY

1. Airborne Release Corresponds to:

a. 20 mrem/hour at the site boundary (NOT the security fence) as determined by field radiation surveys or dose projection.

OR

b. Offsite dose due to the event is projected to exceed 170 mrem to the whole body or the child thyroid.

NOTE

Since dose projections commence whenever a release exceeds the technical specification limit, a prolonged, low level release may result in the declaration of a Site Emergency without exceeding the 20 mrem/hour criterion.

GENERAL EMERGENCY

1. Airborne Release Corresponds to:

   a. > 600 mrem/hour at the site boundary (NOT the security fence) as determined by field radiation surveys or dose projection.

   OR

   b. Offsite dose due to the event is projected to exceed 5 rem to the whole body, or 25 rem to the child thyroid.

IN-PLANT RADIATION LEVELS

UNUSUAL EVENT

Not Applicable

ALERT

1. Unexpected Increase in In-Plant Radioactivity Levels

   a. Fuel Handling Accident results in release of radioactivity to occupied areas such that direct radiation levels in the areas increase by a factor of 1000 or higher.

   b. A verified uncontrolled event results in an unexpected increase in in-plant direct radiation levels by a factor greater than 1000; as indicated by:

Instrument	Description	EAL
RM-1RM-201 thru RM-1RM-214	Area Radiation Monitors	1000 x normal

Increased readings on the following instruments indicate a release of radioactivity to the plant. They are verified by field measurements:

RM-1VS-101 A/B	Ventilation Vent Monitor	*
RM-1VS-102 A/B	Auxil. Bldg. Ventilation Exch. Monitor	*
RM-1VS-103 A/B	Fuel Bldg. Ventilation Exh. Monitor	*
RM-1VS-104 A/B	Containment Purge Exh. Monitor	*
RM-1VS-105	Leak Collect Area Gas Monitor	*
RM-1VS-106	Waste Gas Tank Vault Exh. Monitor	*
RM-1VS-107 A/B	Elevated Release Monitor	*
RM-1RM-215 A/B	Containment Monitor	*
RM-1RM-117 A/B	Multisample Monitor	*

NOTE: *Field measurements with portable survey instruments 1000 x norm.

SITE EMERGENCY

1. Spent Fuel Damage

Major damage to spent fuel due to fuel handling accident; results in offsite doses in excess of 170 mrem.

Instrument	Description	Alarm	EAL
Area and ventilation monitors identified above (Alert)		N/A	N/A
Field Measurements with portable survey instruments		N/A	20 mrem/hr*

*at site boundary.

2. Spent Fuel Pool Level Decrease

Uncontrolled decrease in fuel pool water to below level of fuel.

Instrument	Description	Alarm	EAL
A6-3	Spent Fuel Pool Level	Low	N/A
A11-40	Fuel Pool T/T Drains Rcvr Tk Level	High	N/A

GENERAL EMERGENCY

Refer to Offsite Release EALs.

RCS TEMPERATURE HI/LOW

UNUSUAL EVENT

1. RCS Tempertaure <LCO

Instrument	Description	Alarm	EAL
TI-RC-412	Loop 1A Tavg	N/A	> 541°
TI-RC-421	Loop 1B Tavg	N/A	> 541°
TI-RC-432	Loop 1C Tavg	N/A	> 541°

2. RCS Tempertaure Greater Than Safety Limit

   Operation outside of acceptable region on Figure 2.1-1 of BVPS Technical Specification (temperature versus thermal power and PZR pressure).

3. RCS Temperature Exceeds DNB LCO (>581 F)

ALERT

Not Applicable

SITE EMERGENCY

Not Applicable

GENERAL EMERGENCY

Not Applicable

RCS/PZR PRESSURE HI/LOW

UNUSUAL EVENT

1. RCS/PZR Pressure Exceeds Safety Limit (>2735 PSIG)

Instrument	Description	Alarm	EAL
PI-RC-402A/403A	RCS Pressure	N/A	>2735
A4-9 "Pressurizer Press High"		2385	N/A
A4-19 "Pressurizer Control Press High"		2310	N/A
A4-13 "Pressurzier Control Press Hi Pwr Relief Act"		2335	N/A

2. RCS/PZR Pressure Less Than Safety Limit

Operation outside of acceptable region on Figure 2.1-1 of BVPS Technical Specifications (Pressure versus thermal power and RCS temperature).

ALERT

Not Applicable

SITE EMERGENCY

Not Applicable

GENERAL EMERGENCY

Not Applicable

RCS LEAKAGE

NOTE

There are no instruments which directly measure RCS leakage. RCS Leakage is determined by a leak rate surveillance procedure. The instruments listed below may be indicators that a significant leak exists.

RM-LRM-215A	Containment Particulate Monitor
RM-1RM-215B	Containment Gas Monitor
RM-1RM-201	Containment Low Range Area Monitor
RM-1RM-202	Containment High Range Area Monitor
TI-RC-463	Pressurizer Pwr Relief Disch Temperature
TI-RC-465/467/469	Pressurizer Safety Relief Disch. Temperature
LI-RC-470	Pressurizer Relief Tank Level
LI-RC-460/462	Pressurizer Level
PI-LM-100	Containment Total Pressure
TI-LM-100	Containment Temperature
A4-25	"Pressurizer Power Relief Disch Temp High"
A4-26/27/28	"Pressurizer Safety Relief Disch Temp High"
A1-58	"Containment Pressure High"
A1-60/66	"Containment Pressure High High"
A4-3	"Pressurizer Control Level Low"
A3-96	"React Flange Leakoff Temp High"

UNUSUAL EVENT

1. Any Non-isolatable Pressure Boundary Leakage
2. Unidentified Leakage >1 gpm
3. Identified Leakage >10 gpm
4. Controlled Leakage >28 gpm at RCS Pressure 2230 ± 20 PSIG
5. (See also RCS/Secondary Leakage)

ALERT

1. Leakage Exceeds 50 gpm

SITE EMERGENCY

1. Leakage Exceeds Make-up Capability

GENERAL EMERGENCY

1. LOCA
   a. Loss of Coolant Accident with failure of ECCS.
   b. Loss of Coolant Accident with subsequent failure of heat removal systems; likely failure of containment.
   c. Loss of Coolant Accident with fuel failure and propable imminent failure of containment.

RCS/SECONDARY LEAKAGE

NOTE

There are no instruments which directly measure RCS/Secondary Leakage. RCS/Second Leakage is determined by a leak rate surveillance procedure. The instruments listed below are indicators that a significant leak exists.

RM-1SV-100	Condenser Air Ejector Vent Monitor
RM-1SS-100	Steam Generator Bowdown Sample Monitor
RM-1BD-100	Steam Generator Blowdown Tank Discharge Monitor
LI-RC-460/462	Pressurizer Level
A4-3	"Pressurizer Control Level Low"

UNUSUAL EVENT

1. RCS/Secondary Leakage Exceeds 1 gpm Through all Non-isolated S/Gs
2. RCS/Secondary Leakage Exceeds 500 gpd Through Any One S/G
3. Steam Generator Activity Exceeds 0.10 Ci/gram Dose Equivalent 1-131
4. (see also RCS Leakage)

ALERT

1. RCS/Secondary Leakage Exceeds 200 gpm

SITE EMERGENCY

1. RCS/Secondary Leakage Exceeds 1000 gpm
2. RCS/Secondary Leakage Exceeds 50 gpm Concurrent With Main Steam Line Break and Indication of Fuel Failure

GENERAL EMERGENCY

Refer to RCS Leakage/LOCA EALs

MAIN STEAM LINE BREAK

UNUSUAL EVENT

Not Applicable

ALERT

1. MSL Break Concurrent with 10 gpm RCS/Secondary Leak

Annunciator	Description
A5-13	"Steamline Pressure Low or Pressure Rate High"
A7-9	"Loop 1 Steamline Pressure Low"
A7-17	"Loop 2 Steamline Pressure Low"
A7-25	"Loop 3 Steamline Pressure Low"

2. MSL Break With MSIV Failure

SITE EMERGENCY

1. MSL Break Concurrent with 50 gpm RCS/Secondary Leak with Fuel Failure

   Same annunciators as above

GENERAL EMERGENCY

Not Applicable

FUEL CLADDING DEGRATION

UNUSUAL EVENT

1. I-131 Dose Equivalent Exceeds LCO (>1.0 Ci/gram Steady State

Instrument	Description	Alarm
RM-1CH-101A/B	Reactor Coolant Letdown Monitors	Hi/Hi

Radiochemistry analyses

2. Specific Activity Exceeds LCO (>100/E Ci/gram) (Steady State)

Instruments/analyses as above.

ALERT

1. RCS I-131 Dose Equivalent Activity Exceeds 300 µCi/gram

Instruments and Analyses as above.

SITE EMERGENCY

1. Degraded Core-Possible Loss of Coolable Geometry

Evidence is uneven core temperature distribution (thermocouples); RCS flow decrease; in addition to the activity indications above.

GENERAL EMERGENCY

1. Loss of 2 of 3 Fission Product Barriers

Fuel cladding failure with LOCA and with potential loss of containment integrity.

PORV/SAFETY RELIEF FAILURE

USUAL EVENT

1. PORV or Safety Relief Valve Leakage

PORV or safety relief valve leakage exceeds primary leakage LCO (>10 gpm). Indications of leakage are:

Instrument	Description
TI-RC-463	Pressurizer Relief Line PORV Temperature
TI-RC-465/467/469	Pressurizer Safety Relief Line Temperature
LT-RC-470	Pressurizer Relief Tank Level
A4-36	"Pressurizer Relief Tank Level High"
A4-25	"Pressurizer Power Relief Line Disch Temp High"
A4-26/27/28	"Pressurizer Safety Relief Line Disch Temp High"
A4-37	"Pressurizer Relief Tank Press High"

2. Safety Relief Valve Fails to Operate

Safety valve fails to operate at LCO (>2485 ± 10 PSIG).

ALERT

See LOCA EALs

SITE EMERGENCY

See LOCA EALs

GENERAL EMERGENCY

See LOCA EALs

SIS INITIATION

UNUSUAL EVENT

1. Initiation of SIS

Valid safety circuit trip or necessary manual initiation. The following instruments are indications that SIS has initiated:

Instrument	Description
A1-80	"Safety Injection Pump Auto Start/Stop"
ANN-SIA	Safety Injection Activation Annunciator System
FI-SI-961/962/963	High Head Safety Injection Header Fllow (Cold Legs)
FI-SI-940	High Head Safety Injection to RCS Injection Hdrs
FI-SI-945/946	Low Head SI Pump Disch Header
FI-SI-943	Boron Injection Tank Flow

ALERT

Not Applicable

SITE EMERGENCY

Not Applicable

GENERAL EMERGENCY

Not Applicable

RCS PUMP LOCKED ROTOR

UNUSUAL EVENT

Not Applicable

ALERT

1. RCS Pump Locked Rotor

   RCS pump locked rotor, resulting in reduction in RCS Flow.

Annunciator	Description
A3-104	"Reactor Cool Pump 1A Flow Low"
A3-112	"Reactor Cool Pump 1B Flow Low"
A3-120	"Reactor Cool Pump 1C Flow Low"

Reactor Coolant Pump "run" lamps off

SITE EMERGENCY

Not Applicable

GENERAL EMERGENCY

Not Applicable

CONTAINMENT INTEGRITY

UNUSUAL EVENT

1. Loss of Containment Integrity

   Containment leak rate exceeds technical specification LCOs, as discovered during surveillance test; or inability to maintain containment pressure.

Instrument	Description
Pl-LM-100	Containment Total Pressure
PI-CV-101	Total Pressure
Al-58	"Containment Pressure High"
Al-35/43	"Containment Air Partial Pressure High/Low"

ALERT

Not Applicable

SITE EMERGENCY

1. High Containment Pressure

   Containment total pressure greater than 5 PSIG but less than 45 PSIG

   Instruments as identified in Unusual Event above.

GENERAL EMERGENCY

1. Failure of containment imminent concurrent with LOCA and fuel cladding damage.

LOSS OF ESF'S

UNUSUAL EVENT

1. Loss of Engineered Safety Features (ESF) requiring shutdown by LCO. The following is a list of operable ESF subsystems necessary to meet LCO:

SIS Accumulators Operable	
Operable SIS Subsystems	Surveillance
Boron Injection Tank Operable	
Operable Containment Quench Spray Subsystems	Surveillance
Operable Containment Recirculation Spray Subsystems	Surveillance
Operable Chemical Addition System	Surveillance
Operable Containment Isolation Valves	Surveillance
Containment Integrity (See Containment Integrity EALs)	
Operable Containment H2 Monitors	Surveillance
Operable H2 Recombiners	Surveillance
Operable Containment H2 Purge	Surveillance
Operable Mechanical Vacuum Pumps	Surveillance
ESF Activation System Operable with Proper setpoints/ response times	Surveillance

ALERT

Not Applicable

SITE EMERGENCY

Not Applicable

GENERAL EMERGENCY

Not Applicable

PROTECTION SYSTEM FAILURE

UNUSUAL EVENT

Not Applicable

ALERT

1. Reactor Not Subcritical After Valid Trip Signal(s)

SITE EMERGENCY

Not Applicable

GENERAL EMERGENCY

1. Reactor Protection System fails to initiate or complete a trip, followed by a loss of core cooling and make-up systems, which results in fuel degradation.

LOSS OF PLANT CONTROL

UNUSUAL EVENT

Not Applicable

ALERT

1. Loss of Capability to Achieve Cold Shutdown

SITE EMERGENCY

1. Loss of Capability to Achieve Hot Shutdown

GENERAL EMERGENCY

1. Loss of Plant Control

LOSS OF INSTRUMENTATION

UNUSUAL EVENT

1. Loss of Indicators, Annunciators, or Alarms in Excess of LCO

   a. Loss of indicators, annunciators on effluent parameters during release

   b. Inoperable ESF Activation System Instrumentation per table 3.3-3 of BVPS Technical Specifications.

   c. Inoperable remote indications on Shutdown Panel in excess of minimum channels per table 3.3-9 of BVPS Technical Specifications.

   d. Inoperable RCS Leakage Detection System (2 of 3 channels failed). Includes:

Containment Particulate Radioactivity	RM-1RM-215A
Containment Gaseous Radioactivity	RM-1RM-215B
Containment Sump Discharge Flow Measurement System	Local readout

ALERT

1. Loss of All Annunciators Sustained for 5 Minutes

SITE EMERGENCY

1. Loss of All Annunciators 15 Minutes with Plant Not in Cold S/D

2. Uncontrolled Transient Occurs While Annunciators are Inoperative

GENERAL EMERGENCY

1. Loss of Plant Control

CONTROL ROOM EVACUATION

UNUSUAL EVENT

Not Applicable

ALERT

1. Control Room Evacuation Required or Anticipated-Control at Remote Shutdown Panel

Evacuation of the Control Room is required or anticipated and control of shutdown systems has been established at the Remote Shutdown Panel.

Instrument	Description
RM-1RM-213	Main Control Room Area Monitor
A11-53/54	Control Room Chlorine Detector (3 Channels)
Fire in Control Room	
Heavy Smoke in Control Room	
Other Toxic Gases observed.	

SITE EMERGENCY

1. Required Control Room Evacuation-Remote Control not Established Within 15 Minutes

Evacuation of the Control Room is required and control of shutdown systems has not been established at the Remote Shutdown Panel within 15 minutes.

GENERAL EMERGENCY

1. Loss of Plant Control

TOXIC/FLAMMABLE GASES

UNUSUAL EVENT

1. Uncontrolled Release Near-by or ONsite-Potentially Harmful

Instrument	Description
A11-53	Control Room Chlorine Detector
A11-86	"Chlorinator Control Unit Area Chlorine Gas Leak"
A11-54	"Chlorine Gas Leak"

Observation by irritation, noticeable odor, samples, verbal reports of authenticated accidents resulting in release

ALERT

1. Enters Facility, Causes Habitability Problems (in Control Room)

SITE EMERGENCY

1. Gas Enters Vital Areas and Restricts Access Necessary for Safe Shutdown

GENERAL EMERGENCY

1. Loss of Plant Control

SECURITY COMPROMISE

UNUSUAL EVENT

Not Applicable. Action per BVPS Security Plan.

ALERT

Not Applicable. Action per BVPS Security Plan.

SITE EMERGENCY

1. Imminent Loss of Physical Control of Plant

GENERAL EMERGENCY

1. Loss of Physical Control of Plant

LOSS OF AC POWER

UNUSUAL EVENT

1. Loss of On-site AC Power Capability

Annunciator	Description
A8-76	"4160 V Bus 1A Undervoltage"
A8-84	"4160 V Bus 1B Undervoltage"
A8-92	"4160 V Bus 1C Undervoltage"
A8-100	"4160 V Bus 1D Undervoltage"
A8-109	"4160 V Emergency Bus 1AE Undervoltage"
A8-117	"4160 V Emergency Bus 1DF Undervoltage"

Diesel Generator Inoperative per LCO

2. Loss of Offsite Power per LCO

ALERT

1. Temporary Loss of Both Onsite and Offsite AC Power (Diesels Unavailable)

SITE EMERGENCY

1. Loss of Both ONsite (Diesels Unavailable) and Offsite Power for Longer than 15 Minutes

GENERAL EMERGENCY

L. Loss of Plant Control

LOSS OF DC POWER

UNUSUAL EVENT

Not Applicable

ALERT

1. Loss of All Onsite DC Power

Annunciator	Description
	"DC Dist Pnl No. 1 Loss of Control DC" (one for each of 7 panels

SITE EMERGENCY

1. Loss of DC Power Sustained for Longer than 15 Minutes

GENERAL EMERGENCY

1. Loss of Plant Control

TORNADO

UNUSUAL EVENT

1. Tornado Warning Received/Tornado Sighted-Probable Effect on Station

Instrument	Description
Met. System	Wind Speed Indicator 35'
Met. System	Wind Speed Indicator 150'
Met. System	Wind Speed Indicator 500'

Weater Bureau advisories

Personnel sighting

ALERT

1. Tornado Strikes Vital Plant Structures

SITE EMERGENCY

1. Tornado Causes Damage to Safe Shutdown Equipment

GENERAL EMERGENCY

1. Loss of Plant Control

RIVER WATER HI/LOW

UNUSUAL EVENT

1. River Water Level Less Than or in Excess of LCO

   By Observation/Report by Corps of Engineers.

ALERT

1. River Water Level Between 705 and 730 MSL

   (Main Transformer grade elevation is 706 MSL)

SITE EMERGENCY

1. River Water Level Exceeds 730 MSL
2. Flood Causes Damage to Vital Equipment

GENERAL EMERGENCY

1. Loss of Plant Control

EARTHQUAKE

UNUSUAL EVENT

1. Earthquake Detected by Site Seismic Instrumentation

The Accelerograph Recording System initiates upon detection of a seismic event resulting in 0.01 g acceleration. "Seismic Accelerograph Operation" annunciator (A11-59) indicates start of system.

ALERT

1. Earthquake Greater Than 0.06 g (OBE) Occurs

SITE EMERGENCY

1. Earthquake Greater Than 0.125 g (SSE) Occurs

GENERAL EMERGENCY

1. Loss of Plant Control

FIRE

UNUSUAL EVENT

1. Fire Within Plant Not Under Control Within 10 Minutes

   Fire within plant which is not brought under control within 10 minutes from start of firefighting efforts.

ALERT

1. Fire Which Potentially Affects Safety Systems

SITE EMERGENCY

1. Fire Affects Safety Systems Necessary for Shutdown

GENERAL EMERGENCY

1. Loss of Plant Control

EXPLOSION

UNUSUAL EVENT

1. Near or Onsite Explosion With Potential Significant Damage

ALERT

1. Explosion With Known Damage to Facility, Affecting Operation

SITE EMERGENCY

1. Explosion Causes Severe Damage to Safe Shutdown Equipment

GENERAL EMERGENCY

1. Loss of Plant Control Occurs

AIRCRAFT

UNUSUAL EVENT

1. Unusual Aircraft Activity Over Facility
2. Aircraft Crashes Onsite

ALERT

1. Aircraft or Missile Strikes a Station Structure

SITE EMERGENCY

1. Aircraft or Missile Crash Affects Vital Structure by Impact or Fire

GENERAL EMERGENCY

1. Loss of Plant Control Occurs

MISCELLANEOUS

UNUSUAL EVENT

1. Train Derails Onstie

   Observation

2. Watercraft Strikes Intake Structure-Resultes in Flow Reduction

   Observation

   Loss of Reactor Plant River Water Flow INdications.

3. Contaminated Injury

   Personnel injury occurs which results in the transportation of contaminated and injured personnel to an offsite hospital.

4. Accident at SAPS

   PAX/Bell Telephone

   "Shippingport Evacuation Alert" annunciator (A4-100)

5. Oil Pipeline Rupture

   Observation

6. Turbine Casing Failure

   Turbine casing penetrated by turbine blading or other missiles.

ALERT

Not Applicable

SITE EMERGENCY

Not Applicable

GENERAL EMERGENCY

Not Applicable

Instruction

UNUSUAL EVENT

A. OBJECTIVE

This instruction describes the actions to be taken for an Unusual Event at the Beaver Valley Power Station. This instruction also designates the pre-planned response actions necessary to contend with the condition and references applicable procedures that prescribe the necessary supplementary actions.

The Emergency Director (Shift Supervisor, until properly relieved by a designated alternate) has the responsibility and authority for implementation of the actions prescribed in this instruction. The Emergency Director may delegate responsibility for performance of the prescribed tasks to available qualified Duquesne Light personnel, except where otherwise specified in this instruction.

B. PREREQUISITIES/INITIAL CONDITIONS

An Unusual Event has been declared based on the occurrence of off-normal events which could indicate a potential degradation of the level of safety of the plant. Events characterized as Unusual Events are described in Section IV and EPP/I-1, "Recognition and Classification of Emergencies".

C. PRECAUTIONS

Continued surveillance and assessment of plant conditions are necessary to ensure that the emergency classification is appropriately revised as conditions change, or more definitive information is obtained.

D. PROCEDURE

1. For All Initiating Events

    1.1 Implement corrective actions to contend with the situation and to mitigate possible deterioration in plant conditions in accordance with the BVPS Operating Manual while simultaneously implementing this instruction. Perform Steps D.2, 3, 4, 5, and 6 of this EPP/I in conjunction with the remaining steps in this section, as appropriate to the event.

1.2 Implement appropriate assessment actions. Complete an Emergency Initial Notification Form using data derived from the initial assessment activities.

1.3 Notify the on-call Emergency Director of the emergency condition. Use the Emergency Initial Notification Form and provide additional information as requested and as available. If the on-call Emergency Director is not readily available, notify a designated alternate in the following sequence:

Name	PAX	Residence
1. H. P. Williams	5101	
2. M. Coppula	5208	
3. W. S. Lacey	5111	

1.4 Notify appropriate additional DLC personnel for assistance in assessment or corrective actions as necessary. Refer to the latest monthly telephone number list. It is not necessary to activate the emergency organization or the Technical Support Center (TSC) for an Unusual Event. However, the Emergency Director may activate all or part of the emergency organization and may activate the TSC if deemed appropriate.

1.5 Notify the offsite authorities listed on the Emergency Notification Call list. Use the Emergency Initial Notification Form to relay the information. If necessary, refer to EPP/IP-1.1, "Notification". Notifications to the listed authorities shall be made <u>within one hour</u> following <u>declaration</u> of the emergency. Notifications to BCEMA, PEMA, CCDSA, and/or HCOES shall be made <u>prior to any press release</u> on the incident.

1.6 Complete a Follow-up Notification Form using the most current data available at the time the form is completed.

1.7 When offsite agencies call back, provide information from the Followup Notification Form as applicable to the emergency condition. Accept calls and provide information to only those organizations listed on the Emergency Notification Call-list. Refer all other calls to DLC Public Information (412-456-6279 or 6000).

NOTE

If a call back is not received within a reasonable period of time, remake the initial notification to that party.

1.8 Inform DLC Public Information Department of the event and request that they complete notifications on the Notification of Public Interest Call-list, providing information recorded on the Emergency Initial Notification Form and Follow-up Notification Forms.

1.9 If plant conditions deteriorate, escalate the emergency classification. Perform actions in accordance with the appropriate EPP/Instruction.

1.10 Continue emergency operations until such time as plant conditions have stablized and other termination criteria of EPP/IP-6.3 "Termination of the Emergency" have been satisfied.

2. For Initiating Event: Radioactivity Release to the Atmosphere

2.1 Perform appropriate corrective measures to terminate the release.

2.2 Initiate offsite dose projection activities in accordance with EPP/IP-2.6.1, "Dose Projection--Short Form", continuing with EPP/IP-2.6, Projection", as necessary.

2.3 Initiate an emergency onsite radiation survey in accordance with EPP/IP-2.2, "Onsite Monitoring for Airborne Release".

2.4 If the results of the onsite survey indicate the need, initiate radiation surveys offsite and escalate the emergency classification as warranted.

3. For Initiating Event: Radioactivity Release to the Ohio River

3.1 Perform appropriate corrective measures to terminate the release.

3.2 Determine the activity of the release by effluent monitor reading, or by estimate in accordance with EPP/IP-2.7, "Liquid Release Estimate".

If the gross activity released was, or is projected to be 35 times MPC (10 CFR 20) or greater (following cooling tower blowdown dilution), reclassify the emergency as an Alert and perform emergency measures in accordance with EPP/I-3, "Alert". Immediately notify offsite authorities of the reclassification of the emergency.

3.3 If the estimated activity released is less than 35 times MPC, but greater than MPC (after dilution), determine the activity in the Ohio River by sampling and analysis in accordance with EPP/IP-2.4 "Offsite Monitoring for Liquid Release", to confirm the results of the estimate.

4. For Initiating Event: Fire/Explosion

4.1 Perform firefighting efforts in controlled areas in accordance with EPP/IP-8.1, "Fires in Controlled Areas" and in accordance with Chapter 56B of the Operating Manual "Fire Prevention and Control".

4.2 If the fire is in an un-controlled area, refer to Chapter 56B, Section 4 "Fire Prevention and Control".

5. For Initiating Event: Contaminated Personnel Injury

5.1 Perform emergency measures in accordance with EPP/IP-5.2, "Contaminated/ Irradiated Personnel Injuries" in cases of personnel injuries which are compounded by contamination and for which transfer to a hospital is necessary.

5.2 If the injury does not involve contamination and transportation to a hospital, refer to Chapter 56 "Injury and Casualty Control", Section 4, and the BVPS Radiological Control Manual, if applicable.

6. For Initiating Events: Tornado/Earthquake/Storms/Flooding

6.1 Perform emergency measures in accordance with Operating Manual Chapter 53.

E. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures

2. Beaver Valley Power Station Operating Manual

3. Beaver Valley Power Station Radiological Control Manual

4. Title 10 Code of Federal Regulations Part 50, Appendix E

5. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

F. ATTACHMENTS

1. Checklist--Gas

2. Checklist--Liquid

3. Checklist--Contaminated Personnel Injury

Duquesne Light

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CHECKLIST

Note

The use of this checklist is optional. It is provided as a convenience for the Emergency Director. It need not be filled out, nor retained. This checklist is not intended to replace the EPP/Instruction to which it is attached.

Unusual Event - Gas

EPP/IP	STEP	OUTLINE	Initial	Time
I-2	1.1	Implement corrective actions (Stop release)	______	______
I-2	2.2	Initiate and continue dose projection (EPP/IP-2.6)	______	______
I-2	2.3	Initiate radiation survey (EPP/IP-2.2)	______	______
I-2	1.2	Complete Initial Notification Form	______	______
I-2	1.3	Notify designated Emergency Director	______	______
I-2	1.4	Notify additional DLC personnel for assistance	______	______
I-2	2.4	Escalate to Alert if necessary (Alert-Gas checklist)	______	______
I-2	1.5	Notify offsite authorities (EPP/IP-1.1)	______	______
I-2	1.6,7	Complete follow-up notification	______	______
I-2	1.8	Have Public Information Department complete their notifications	______	______
I-2	1.10	Terminate when termination criteria (EPP/IP-6.2) have been met	______	______

CHECKLIST

Note

The use of this checklist is optional. It is provided as a convenience for the Emergency Director. It need not be filled out, nor retained. This checklist is not intended to replace the EPP/Instruction to which it is attached.

Unusual Event - Liquid

EPP/IP	STEP	OUTLINE	Initial	Time
I-2	1.1	Implement corrective actions (Stop release)		
I-2	3.2	Estimate release (EPP/IP-2.7). If Release 35 MPC, declare Alert (Alert-Liquid checklist)		
I-2	1.2	Complete Initial Notification Form		
I-2	1.3	Notify designated Emergency Director		
I-2	1.4	Notify additional DLC personnel for assistance		
I-2	3.3	Sample river (EPP/IP-2.4). If release 35 MPC, declare Alert (alert-liquid checklist)		
I-2	1.5	Notify offsite authorities including Coast Guard, US Corps of Engineers, and water treatment plants (EPP/IP-1.1)		
I-2	1.6, 7	Complete follow-up notification		
I-2	1.8	Have Public Information Department complete their notifications		
I-2	1.10	Terminate when termination criteria (EPP/IP-6.2) have been met		

CHECKLIST

Note

The use of this checklist is optional. It is provided as a convenience for the Emergency Director. It need not be filled out, nor retained. This checklist is not intended to replace the EPP/Instruction to which it is attached.

Unusual Event - Contaminated Personnel Injury

EPP/IP	STEP	OUTLINE	Initial	Time
5.2	1.1,2	Sound Standby Alarm and dispatch Emergency Squad	______	______
5.2	1.5	Call ambulance (if necessary)	______	______
5.2	1.6	Notify hospital	______	______
5.2	1.7	If victim cannot be transported, summon medical assistance to station (Drs. Wald and Spritzer, RERP program).	______	______
5.2	1.8	Notify security guards of impending ambulance arrival	______	______
5.2	1.9	Direct Emergency Squad to transport victim to first aid room (if he can be moved).	______	______
5.2	1.11	Decontaminate victim (if time is available).	______	______
5.2	1.12	Prepare ambulance to minimize contamination	______	______
5.2	1.13	Direct DLC Supervisor and Radcon technician to accompany victim to hospital	______	______
I-2	1.2	Complete Initial Notification Form	______	______
I-2	1.3	Notify designated Emergency Director	______	______
I-2	1.5	Notify offsite authorities (EPP/IP-1.1)	______	______
I-2	1.6,7	Complete follow-up notifications	______	______
I-2	1.8	Have Public Information Department complete their notifications	______	______
I-2	1.10	Terminate when termination criteria (EPP/IP-6.2) have been met	______	______

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Instruction

ALERT

A. OBJECTIVE

This instruction describes the actions to be taken in the event that an Alert emergency condition has been declared at the Beaver Valley Power Station. This instruction also designates the pre-planned response actions necessary to contend with the emergency condition and references applicable procedures that prescribe the necessary supplementary actions.

The Emergency Director (Shift Supervisor, until properly relieved by a designated alternate) has the responsibility and authority for the completion of the prescribed actions in this instruction. The Emergency Director may delegate responsibility for performance of the prescribed tasks to available qualified Duquesne Light personnel, except where otherwise specified in this instruction.

B. PREREQUISITES/INITIAL CONDITIONS

1. An Alert emergency condition has been declared based on the occurrence of events which indicate an actual or potential degradation of the level of safety of the plant. Events classified as Alert emergencies are described in Section IV and EPP/I-1, "Recognition and Classification of Emergencies".

and/or

2. An Unusual Event had been declared and emergency measures are being performed; and on the basis of subsequent information or upon a deterioration in plant conditions, the condition has been reclassified as an Alert.

C. PRECAUTIONS

Continued surveillance and assessment of plant conditions are necessary to ensure that the emergency classification is appropriately revised as conditions change, or more definitive information is obtained.

D. PROCEDURE

1. For All Initiating Events

1.1 Implement corrective actions to contend with the situation and to mitigate possible deterioration in plant conditions in accordance with the BVPS Operating Manual while simultaneously implementing this instruction. Perform Steps D.2, 3, 4, and 5 of this EPP/IP in conjunction with the remaining steps in this section, as appropriate to the event.

1.2 Implement appropriate assessment actions. Complete an Emergency Initial Notification Form using data derived from the initial assessment activities.

1.3 Notify the designated Emergency Director of the emergency condition. Use the Emergency Initial Notification Form and provide additional information as requested and as available. If the designated Emergency Director is not readily available, notify a designated alternate in the following sequence:

Name	PAX	Residence
1. H. P. Williams	5101	
2. M. Coppula	5208	
3. W. S. Lacey	5111	

1.4 Notify the offsite authorities listed on the Emergency Notification Call-list. Use the Emergency Initial Notification Form to relay the data. If necessary, refer to EPP/IP-1.1, "Notification". Notifications to the listed authorities shall be made immediately upon declaration of the emergency. Notifications to BCEMA, PEMA, CCDSA, and/or HCOES shall be made prior to any press release on the incident.

1.5 Notify the designated Emergency/Recovery Manager of the emergency condition and place him on standby in anticipation of a possible escalation in the emergency classification. Use the Emergency Initial Notification Form and provide additional information as requested and as available. If the designated Emergency/Recovery Manager is not readily available, notify a designated alternative in the following sequence:

	Name	PAX	Residence
1.	T. D. Jones	5202	
2.	J. D. Sieber	5212	
3.	F. J. Bissert	5200	
4.	R. F. Balcerek	5218	

1.6 Activate the Technical Support Center and notify TSC personnel, or designated alternatives using the Station Page-Party System or telephone callout. As personnel arrive, assign appropriate responsibilities and transfer functions from the Control Room to TSC. Until the designated personnel arrive, assign available shift personnel and other to assist with these functions. The following may be referenced:

1.6.1 EPP/IP-1.4, "TSC Organization and Operation"

1.6.2 Monthly BVPS Telephone Call-list

1.7 If in-plant radiological conditions indicate the need, activate the Operations Support Center (OSC), and the Radcon Operations Center (ROC). Refer to EPP/IP-1.5, "Emergency Support Center Organization and Operation", as necessary.

1.8 Complete a Follow-up Notification Form using the most current data available at the time the form is completed.

1.9 When offsite agencies call back, provide information from the Follow-up Notification Form as applicable to the emergency condition. Accept calls and provide information to only those organizations listed on the Emergency Notification Call-list. Refer all other calls to DLC Public Information (412-456-6279 or 6000).

NOTE

If a call back is not received within a reasonable period of time, remake the initial notification to that party.

1.10 Inform DLC Public Information Department of the event and request that they complete notifications on the Notifications of Public Interest Call-list, providing information recorded on the Emergency Initial Notification Form and Follow-up Notification Form.

1.11 If plant conditions deteriorate, escalate the emergency classification. Perform actions in accordance with the appropriate EPP/Instruction.

1.12 Continue emergency operations until such time as plant conditions have stablized and other termination criteria of EPP/IP-6.3 "Termination of the Emergency" have been satisfied.

2. For Initiating Event: Radioactivity Release to the Atmosphere or Unexpected Increases in In-Plant Radiation Levels

2.1 Perform appropriate corrective measures in accordance with the Station Operating Manual and/or the Radiological Control Manual to terminate the release or to regain control over plant radiation levels. If not already done, activate additional radiological controls personnel.

2.2 Initiate offsite dose projection activities in accordance with EPP/IP-2.2 "Onsite Monitoring for Airborne Release". Initiate offsite radiation surveys as warranted in accordance with EPP/IP-2.3 "Offsite Monitoring for Airborne Release".

2.3 Initiate an emergency onsite radiation survey in accordance with EPP/IP-2.2, "Onsite Monitoring for Airborne Release". Initiate offsite radiation surveys as warranted in accordance with EPP/IP-2.3, "Offsite Monitoring for Airborne Release."

2.4 If the results of the radiation survey or if area radiation monitors indicate the need, evacuate personnel from affected areas in accordance with EPP/IP-3.1 "Evacuation". EPP/IP-3.1 provides guidance as to when an evacuation should be implemented. If an evacuation is implemented also perform, as applicable:

2.4.1 Account for personnel (EPP/IP-3.2, "Personnel Accountability").

2.4.2 As necessary, search for and/or rescue affected personnel (EPP/IP-5.1, "Search and Rescue").

2.4.3 Re-enter evacuated areas (EPP/IP-6.1, "Re-entry to Affected Areas — Criteria and Guidelines").

2.5 Note the reading on the Control Room Area Radiation Monitor (RM-1RM-213) to evaluate habitability of the Control Room.

2.6 If the results of the onsite survey indicate a dose rate at the site boundary (NOT the security fence) exceeding 20 mrem/hr or a possible accumulative dose of 170 mrem, reclassify the emergency as a Site Area Emergency and perform emergency measures in accordance with EPP/I-4, "Site Area Emergency". Immediately notify offsite authorities of the reclassification of the emergency.

3. For Initiating Event: Radioactivity Release to the Ohio River

3.1 Perform appropriate corrective measures to terminate the release.

3.2 Determine the activity of the release by effluent monitor reading or by estimate in accordance with EPP/IP-2.7, "Liquid Release Estimate". If the gross activity released was or is projected to be 35 times MPC (10 CFR 20) or greater (following cooling tower blowdown), notify offsite authorities of the release immediately.

3.3 Determine the activity in the Ohio River by sampling and anaylsis in accordance with EPP/IP-2.4, "Offsite Monitoring for Liquid Release", to confirm the results of the estimate.

NOTE

State agencies responsible for water quality will likely initiate water sampling at downstream water treatment plants. These agencies will curtail the use of water, based on projected radioactivity concentrations. This protective action and the dilution volume of the Ohio River significantly reduce the potential for offsite doses in excess of 170 mrem (any organ) due to liquid releases.

4. For Initiating Event: Fire/Explosion

4.1 Perform firefighting efforts in controlled areas in accordance with EPP/IP-8.1, "Fires in Controlled Areas" and in accordance with Chapter 56B of the Operating Manual, "Fire Prevention and Control".

4.2 If the fire is in an uncontrolled area, refer to Chapter 56B, "Fire Prevention and Control" Section 4.

5. For Initiating Events: Tornado/Earthquake/Storms/Flooding

5.1 Perform emergency measures in accordance with Operating Manual Chapter 53.

E. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.
2. Beaver Valley Power Station Operating Manual
3. Beaver Valley Power Station Radiological Control Manual
4. Title 10 Code of Federal Regulations Part 50, Appendix E
5. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

F. ATTACHMENTS

1. Checklist--Gas
1. Checklist--Liquid

CHECKLIST

Note

The use of this checklist is optional. It is provided as a convenience for the Emergency Director. It need not be filled out, nor retained. This checklist is not intended to replace the EPP/Instruction to which it is attached.

Alert - Gas

EPP/IP	STEP	OUTLINE	INITIAL	TIME
I-3	1.1	Implement corrective actions (Stop releases)		
I-3	2.2	Initiate and continue dose projections (EPP/IP-2.6)		
I-3	1.2	Complete Initial Notification Form		
I-3	2.3	Initiate onsite radiation survey (EPP/IP-2.3)		
I-3	2.4	Evacuate personnel if necessary (EPP/IP-3.1)		
I-3	1.3	Notify designated Emergency Director		
I-3	1.4	Notify offsite authorities including Coast Guard and Westinghouse (EPP/IP-1.1)		
I-3	1.5	Place Emergency/Recovery Manager on Standby		
I-3	2.6	If dose rate at site boundary 120 mrem/hr or possible accumulative dose of 170 mrem classify as Site Area Emergency		
I-3	1.6	Activate Technical Support Center (EPP/IP-1.4)(EPP/IP-1.3). Activate Radcon Operations Center, Operations Support Center (EPP/IP-1.5), if necessary		
I-3	1.8,9	Complete follow-up notification		
I-3	1.10	Have Public Information Department complete their notifications		
I-3	1.12	Terminate when termination criteria (EPP/IP-6.3) have been met		

CHECKLIST

Note

The use of this checklist is optional. It is provided as a convenience for the Emergency Director. It need not be filled out, nor retained. This checklist is not intended to replace the EPP/Instruction to which it is attached.

Alert - Liquid

EPP/IP	STEP	OUTLINE	INITIAL	TIME
I-3	1.1	Implement corrective actions (Stop release)	______	____
I-3	3.2	Estimate release (EPP/IP-2.7). If >35 MPC, notify offsite authorities immediately	______	____
4.1	6	If >35 MPC advise Midland Water Treatment Plant to stop taking water from Ohio River	______	____
I-3	1.2	Complete Initial Notification Form	______	____
I-3	1.3	Notify designated Emergency Director	______	____
I-3	1.4	Notify offsite authorities including Coast Guard, US Corps of Engineers, Westinghouse, and Water Treatment Plants (EPP/IP-1.1)	______	____
I-3	1.5	Place Emergency/Recovery Manager on Standby	______	____
I-3	3.3	Determine activity by sampling (EPP/IP-2.4)	______	____
I-3	1.6	Activate Technical Support Center (EPP/IP-1.4)(EPP/IP-1.3). Activate Radcon Operations Center, Operations Support Center (EPP/IP-1.5), if necessary	______	____
I-3	1.8,9	Complete follow-up notification	______	____
I-3	1.10	Have public Information Department complete their notifications	______	____
I-3	1.12	Terminate when termination criteria (EPP/IP-6.2) have been met	______	____

Instruction

SITE AREA EMERGENCY

A. OBJECTIVE

This instruction describes the actions to be taken in the event that a Site Area Emergency has been declared at the Beaver Valley Power Station. This instruction also designates the pre-planned response actions necessary to contend with the emergency condition and references applicable procedures that prescribe the necessary supplementary actions.

The Emergency Director (Shift Supervisor, until properly relieved by a designated alternate) has the responsibility and authority for the completion of the prescribed actions in this instruction. When the Emergency Operations Facility is operational, this responsibility is assumed by the Emergency/Recovery Manager. The Emergency Director (or the Emergency/Recovery Manager) may delegate responsibility for performance of the prescribed tasks to available qualified Duquesne Light Personnel, except where otherwise specified in this instruction.

B. PREREQUISITIES/INITIAL CONDITIONS

1. A Site Area Emergency has been declared based on the occurrence of events which involve actual or likely failures of plant functions needed for the protection of the public. Events classified as Site Area emergencies are described in Section IV and EPP/I-1, "Recognition and Classificaiton of Emergencies".

   and/or

2. An Unusual Event or an Alert emergency conditionhad been declared and emergency measures are being performed; and on the basis of subsequent information or upon a deterioration in plant conditions, the condition has been reclassified as a Site Area Emergency.

C. PRECAUTIONS

1. Continued surveillance and assessment of plant conditions are necessary to ensure that the emergency classificaiton is appropriately revised as conditions change or more definitive information is obtained.

2. The Site Area Emergency is the lowest emergency classification in which offsite protective actions for airborne releases may be warranted. In consideration of the lead time necessary to implement offsite protective actions, notifications to offsite authorities must be made as soon as possible following the initiating event and immediately after declaration of a Site Area Emergency.

D. PROCEDURE

1. For All Initiating Events

1.1 Implement corrective actions to contend with the situation and to mitigate possible deterioration in plant conditions in accordance with the BVPS Operating Manual while simultaneously implementing this instruction. Perform Steps D.2, 3, 4, and 5 of this EPP/I in conjunction with the remaining steps in this section, as appropriate to the event.

1.2 Implement appropriate assessment actions. Complete an Emergency Initial Notification Form using data derived from the initial assessment activities.

1.3 Notify the designated Emergency Director of the emergency condition. Use the Emergency Initital Notification Form and provide additonal information as requested and as available. If the designated Emergency Director is not readily available, notify a designated alternate in the following sequence:

	Name	PAX	Residence
1.	H. P. Williams	5105	
2.	M. Coppula	5208	
3.	W. S. Lacey	5111	

1.4 Notify the offsite authorities listed on the Emergency Notificaiton Call-list. Use the Emergency Initial Notificaiton Form to relay the data. If necessary, refer to EPP/IP-1.1, "Notification". Notificaitons to the listed authorities shall be made immediately upon declaration of the emergency. Notifications to BCEMA, PEMA, CCDSA, and/or HCOES shall be made prior to any press release on the incident.

1.5 Notify the designated Emergency/Recovery Manager of the emergency condition and the activaiton of the Emergency Operations Facility (EOF). Use the Emergency Initial Notification Form and provide additional information as requested and as available. If the designated Emergency/Recovery Manager is not readily available, notify a designated alternative in the following sequence:

	Name	PAX	Residence
1.	T. D. Jones	5202	
2.	J. D. Sieber	5212	
3.	F. J. Bissert	5200	
4.	R. F. Balcerek	5218	

1.6 Activate the Technical Support Center and notify TSC personnel, or designated alternatives using the Station Page-Party System or telephone call-out. As personnel arrive, assign appropriate responsibilities and transfer functions from the Control Room to the TSC. Until the designated personnel arrive, assign available shift personnel and other to assist with these functions. The following may be referenced:

1.6.1 EPP/IP-1.4, "TSC Organization and Operation"

1.6.2 Monthly BVPS Telephone Call-list

1.7 Activate the Emergency Operations Facility (EOF), the Operations Support Center (OSC), and the Radcon Operations Center (ROC) and notify appropriate personnel to staff these facilities, using the Station Page-Party System or telephone call-out. The following may be referenced:

1.7.1 EPP/IP-1.5,"Emergency Support Center Organization and Operation"
1.7.2 EPP/IP-1.6,"EOF Organization and Operation"
1.7.3 Monthly BVPS Telephone Call-list

1.8 Complete a Follow-up Notification Form using the most current data available at the time the form is completed.

1.9 When offsite agencies call back, provide information from the Followup Notificaiton Form as applicable to the emergency condition. Accept calls and provide information to only those organizations listed on the Emergency Notification Call-list. Refer all other calls to DLC Public Information (412-456-6279 or 6000).

NOTE

If a call back is not received within a reasonable period of time, remake the initial notification to that party.

1.10 Notify the DLC Public Information Department (PID) and request that they (1) activate the Emrgency News Center (ENC); and (2) complete notifications on the Notification of Public Interest Call-list. In this notification Form and Follow-up Notification Form, and in particular, whether or not the Willows Hotel is in a sector (approximately 2.5 miles in sector C) where offsite protective actions are required.

1.11 Assemble station personnel for possible evacuation by implementing a Unit evacuation in accordance with:

1.11.1 EPP/IP-3.1 "Evaucation"

1.11.2 EPP/IP-3.2 "Personnel Accountability"

1.11.3 EPP/IP-5.1 "Search and Rescue"

Direct Radcon personnel to perform radiation and airborne radioactivity surveys at the designated assembly areas. If the results of radiation surveys at the primary assembly areas indicate radiation levels in excess of 5 mrem/hr or a projected dose in excess of 100 mrem whole body; and/or airborne radioactivity in excess of 1 MPC (40 MPC-hrs/wk) for the isotopic mix less noble gases, relocate to another assembly area, or if necessary, implement a Site evacuation in accordance with EPP/IP-3.1.

1.12 Communications shall be maintained between the Technical Support Center and the Emrgency Operations Facility. Information on the status of emergency response activities should be disseminated between elements of the emergency organization, and with offsite agencies as appropriate, on a periodic basis. In particular, 1.12.1 Notify offsite agencies of any significatn (>100 mrem) change in dose projections, or other significantn changes in plant status. This information exchange can be accomplished at the EOF when all of the three states are represented.

1.12.2 If requested by offsite agencies, provide DLC Liaisons to the offsite Emergency Operations Centers. DLC Operations and Maintenance Instructors should be assigned to these functions where requested. Periodically disseminate status information to these liaisons.

1.13 If plant conditions deteriorate, escalate the emergency classification. Perform actions in accordance with the appropriate EPP/Instruction.

1.14 Continue emergency operations until such time as plant conditions have stablized and other termination criteria of EPP/IP-6.2 "Termination of the Emergency" have been satisified.

2. For Initiating Event: Radioactivity Release to the Atmosphere or Unexpected Increases in In-plant Radiation Levels

2.1 Perform appropriate corrective measures in accordance with the Station Operating Manual to terminate the release or to regain control over plant radiation levels. If not already done, activate additional radiological controls personnel.

2.2 Initiate offsite dose projection activities in accordance with EPP/IP-2.6.1, "Dose Projection--Short Form", continuing with EPP/IP-2.6 "Dose Projection", as necessary.

2.3 Initiate an emergency onsite radiation survey in accordnace with EPP/IP-2.2, "Onsite Monitoring for Airborne Release".

2.4 Initiate an emergency offsite radiation survey in accordance with EPP/IP-2.3 "Offsite Monitoring for Airborne Release".

2.5 Based on the results of the dose projection activities, recommend an appropriate protective action to offsite authorities as part of the initial and/or subsequent follow-up notifications. Refer to EPP/IP-4.1 "Recommendation of Offsite Protective Action".

NOTE

The Emergency/Recovery Manager (Emergency Director until the EOF is operational) is the only individual authorized to determine and recommend a protective action to offsite authorities (recommendation may be relayed by others). Therefore the Emergency/Recovery Manager shall approve all initial and follow-up notification messages for Site Area or General Emergency.

2.6 Note the reading on the Control Room Area Radiation Monitor (RM-1RM-213), and obtain appropriate airborne radioactivity samples. Appropriate isotopic identification should be performed on a priority basis if the result of gross counting on a Control Room air sample exceeds 1 E-9 Ci/cc. Based on this analysis, respirators should be used to maintain personnel exposure less than 40 MPC-hours per week, while minimizing unnecessary respirator use. Radiological monitoring should be repeated on a frequency consistent with the magnitude of the observed radiological levels and/or the potential for change in these levels.

2.7 If the results of the onsite survey indicate a dose rate at the site boundary (NOT the security fence) exceeding 600 mrem/hr or a possible accumulative dose of 5 rem (25 rem thyroid), reclassify the emergency as a General Emergency and perform emergency measures in accordance with EPP/I-5, "General Emergency". Immediately notify offsite authorities of the reclassification of the emergency.

3. For Initiating Event: Radioactivity Release to the Ohio River

NOTE

Liquid releases to the Ohio River are not identified as initiating events for a Site ARea emergency since it is unlikely to have ossite doeses in excess of 170 mrem (any organ) due to the release. A liquid release could occur, however, concurrent with the events which initiated the Site Area emergency. Corrective and assessment measures for liquid releases are provided in Section 3 of EPP/I-3 "Alert".

4. For Initiating Event: Fire/Explosion

4.1 Perform firefighting efforts in controlled areas in accordance with EPP/IP-8.1, Fires in Contrc'led Areas" and in accordance with Chapter 56B of the Operating Manual "Fire Prevention and Control"/

4.2 If the fire is in an uncontrolled area, refer to Chapter 56B, "Fire Prevention and Control" Section 4.

5. For Iniating Events: Tornado/Earthquake/Storms/FloordingZ

5.1 Perform emergency measures in accordance with Operating Manual Chapter 53.

E. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures
2. Beaver VAlley Power Station Operating Manual
3. Beaver VAlley Power Station Radiological Control Manual
4. Title 10 Code of Federal Regulations Part 50, Appendix E
5. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency REsponse Plans and Preparedness in Support of Nuclear Power Plants.

F. ATTACHMENTS

1. Checklist

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CHECKLIST

Note

The use of this checklist is optional. It is provided as a convenience for the Emergency Director. It need not be filled out, nor retained. This checklist is not intended to replace the EPP/Instruction to which it is attached.

Site Area Emergency

EPP/IP	STEP	OUTLINE	Initial	Time
I-4	1.1	Implement corrective actions	______	______
I-4	2.2	Initiate and continue dose proj. (EPP/IP-2.6)	______	______
I-4	1.2	Complete Initial Notification Form	______	______
I-4	2.3	Initiate onsite radiation survey (EPP/IP-2.3)	______	______
I-4	2.4	Initiate offsite radiation survey (EPP/IP-2.3)	______	______
I-4	2.5	Recommend protective actions (EPP/IP-4.1) (to be included in all subsequent notification)	______	______
I-4	1.3	Notify designated Emergency Director	______	______
I-4	1.4	Notify offsite authorities (EPP/IP-1.1)	______	______
I-4	1.5	Notify Emergency/Recovery Manager	______	______
I-4	1.6	Activate TSC	______	______
I-4	1.7	Activate EOF, OSC, ROC	______	______
I-4	2.6	Use respirators if necessary	______	______
I-4	2.7	Reclassify if necessary	______	______
I-4	1.8,9	Complete follow-up notification	______	______
I-4	1.10	Have Public Information Department complete their notifications, activate ENC	______	______
I-4	1.11	Implement unit evacuation (EPP/IP-3.1) (EPP/IP-3.2) (EPP/IP-5.1)	______	______
I-4	1.12	Periodically disseminate info to offsite authorities	______	______
I-4	1.13	If plant conditions deteriorate, escalate classification	______	______
I-4	1.14	Terminate when termination criteria (EPP/IP-6.2) have been met	______	______

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Instruction

GENERAL EMERGENCY

A. OBJECTIVE

This instruction describes the actions to be taken in the event that a General Emergency has been declared at the Beaver Valley Power Station. This instruction also designates the pre-planned response actions necessary to contend with the emergency condition and references applicable procedures that prescribe the necessary supplementary actions.

The Emergency Director (Shift Supervisor, until properly relieved by a designated alternate) has the responsibility and authority for the completion of the prescribed actions in this instruction. When the Emergency Operations Facility is operational, this responsibility is assumed by the Emergency/Recovery Manager. The Emergency Director (or the Emergency/Recovery Manger) may delegate responsibility for performance of the prescribed tasks to available qualified Duquesne Light Personnel, except where otherwise specified in this instruction.

B. PREREQUISITIES/INITIAL CONDITIONS

1. A General Emergency has been declared based on the occurrence of events which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Events classified as General Emergencies are described in Section IV and EPP/I-1, "Recognition and Classification of Emergencies".

and/or

2. A less emergency had been declared and emergency measures are being performed; and on the basis of subsequent information or upon a deterioration in plant conditions, the condition has been reclassified as a General Emergency.

C. PRECAUTIONS

1. Continued surveillance and assessment of plant conditions are necessary to ensure that the emergency classificaiton is appropriately revised as conditions change or more definitive information is obtained.

2. The General Emergency classificaiton includes actual or imminent events for which offsite protective actions will be needed. In consideration of the lead time necessary to implement offsite protective actions, notificaiton to offsite authorities must be made as soon as possible following the initiating event and immediately after declaration of a General Emergency.

D. PROCEDURE

1. For All Initiating Events

1.1 Implement corrective actions to contend with the situation and to mitigate possible deterioration in plant conditiosn in accordance with the BVPS Operating Manual while simultaneously implementing this instruction.

1.2 Implement appropriate assessment actions. Complete an Emergency Initial Notification Form using data derived from the initial assessment activities.

1.3 Notify the designated Emergency Director of the emergency condition. Use the Emergency Initial Notifciation Form and provide additional information as requested and as available. If the designated Emergency Director is not readily available, notify a designated alternate in the following sequence.

	Name	PAX	Residence
1.	H. P. Williams	5101	
2.	M. Coppula	5208	
3.	W. S. Lacey	5111	

1.4 Notify the offsite authorities listed on the Emergency Notificaiton Call-list. Use the Emergency Initial Notificaiton Form to relay the data. If necessary, refer to EPP/IP-1.1, "Notification". Notifications to the listed authorities shall be made immediately upon declaration of the emergency. Notifications to BCEMA, PEMA, CCDSA, and/or HCOES shall be made prior to any press release on the incident. In addition, the State of Ohio (ODSA) and West Virginia (WVOES) shall be notified immediately upon declaration of a General Emergency.

1.5 Notify the designated Emergency/Recovery Manager of the activation of the Emergency Operations Facility (EOF). Use the Emergency Initial Notification Form and provide additional information as requested and as available. If the designated Emergency/Recovery manager is not readily available, notify a designated alternative in the following sequence:

	Name	PAX	Residence
1.	T. D. Jones	5202	
2.	J. D. Sieber	5212	
3.	F. J. Bissert	5200	
4.	R. F. Balcerek	5218	

1.6 Activate the Technical Support Center and notify TSC personnel, or designated alternatives using the Station Page-Party System or telephone call-out. As personnel arrive, assign appropriate responsibilities and transfer functions from the Control Room to the TSC. Until the designated personnel arrive, assign available shift personnel and other to assist with these functions. The following may be referenced:

1.6.1 EPP/IP-1.4, "TSC Organization and Operation"

1.6.2 Monthly BVPS Telephone Call-list

1.7 Activate the Emergency Operations Facility (EOF), the Operations Support Center (OSC), and the Radcon Operatiosn Center (ROC) and notify appropriate personnel to staff these facilities, using the Station Page-Party System or telephone call-out. The following may be referenced:

1.7.1 EPP/IP-1.5,"Emergency Support Center Organization and Operation"
1.7.2 EPP/IP-1.6, "EOF Organization and Operation"
1.7.3 Monthly BVPS Telephone Call-list

1.8 If the incident occurs during off-hours and TSC and EOF personnel are unable to approach the site, the Shift Supervisor retains the position of Emergency Director in the ECC/Control Room until the alternate EOF has been activated, communications established, and the designated Emergency Director or an alternate has relieved the Shift Supervisor from the alternte EOF.

1.9 Complete a Follow-up Notification Form using the most current data available at the time the form is completed.

1.10 When offsite agencies call back, provide information from the Followup Notification Form as applicable to the emergency condition. Accept calls and provide information to only those organizations listed on the Emergency Notificaiton Call-list. REfer all other calls to DLC Public Information (412-456-6279 or 6000).

NOTE

If a call back is not received within a reasonable period of time, remake the initial notificaiton to that party.

1.11 If releases or radioactive material have occurred within the plant, activate additional radiological controls personnel, if not already done.

1.12 If a release has occurred or is imminent assemble station personnel for possible evacuation by implementing a Unit evacuation in accordance with:

1.12.1 EPP/IP-3.1 "Evacuation"

1.12.2 EPP/IP-3.2 "Personnel Accountability"

1.12.3 EPP/IP-5.1 "Search and Rescue"

Direct Radcon personnel to perform radiation and airborne radioactivity surveys at the designated assembly areas. If the results of radiation surveys at the primary assembly areas indicate radiation levels in excess of 5 mrem/hr or a projected dose in excess of 100 mrem whole body; and/or airborne radioactivity in excess of 1 MPC (40 MPC-hours/wk) identified mix less noble gases, relocate to another assembly area, or if necessary, implement a Site evacuation in accordance with EPP/IP-3.1.

NOTE

The implementation of a Site evacuation must be based on the protective action which will result in the lowest personnel exposure. Evacuations should be initiated either before the release, or after passage of the release, and evacuation routes chosen to lead personnel away from the plume. The Emergency Director should consider the dose rates at personnel assembly areas, dose rates onsite, and dose rates along evacuation routes in making an evacuation decision.

1.13 Notify the DLC Public Information Department (PID) and request that they (1) activate the Emergency News Center (ENC); and (2) complete notifications on the Notification of Public Interest Call-list. In this notification, provide PID with information on the Emergency Initial Notification Form and Follow-up Notification Form, and in particular, whether or not the Willows Hotel is in a sector (approximately 2.5 miles in sector C) where offsite protective actions are required.

1.14 Initiate offsite dose projection activities in accordance with EPP/IP-2.6.1, "Dose Projection--Short Form" and continue with EPP/IP-2.6, "Dose Projection" as necessary.

1.15 Initiate an emergency onsite radiation survey in accordance with EPP/IP-2.2, "Onsite Monitoring for Airborne Release".

1.16 Initiate an emergency offsite radiation survey in accordance with EPP/IP-2.3 "Offsite Monitoring for Airborne Release".

1.17 Based on the results of the dose projection activities, recommend an appropriate protective action to offsite authorities as part of the initial and/or subsequent follow-up notificaitons. Refer to EPP/IP-4.1 "Recommendation of Offsite Protective Action".

<u>NOTE</u>

The Emergency Director is the only individual authorized to determine and recommend a protective action to offsite authorities (directly or via Communications and Records Coordiantor). Therefore, the Emergency Director shall approve all initial and follow-up notification messages for Site ARea or General Emergency. When the EOF is activated, the authority for making offsite protective action recommendations is transferred to the Emergency/Recovery Manager.

1.18 Note the reading on the Control Room Area Radiation Monitor (RM-1RM-213). Appropriate isotopic identifciation should be performed on a priority basis if the result of gross counting on a Control Room air sample exceeds 1 E-9 Ci/cc (less noble gases). Based on this analysis, respirators should be used to maintain personnel exposure less than 40 MPC-hours/week, while minimizing unnecessary respirator use.

1.19 Communications shall be maintained between the Technical Support Center and the Emergency Operations Facility. Information on the status of emergency response acitivities should be disseminated between elements of the emergency organization, and with offsite agencies as appropriate, on a periodic basis. In particular,

1.19.1 Notify offsite agencies of any significant (100 mrem) change in dose projections, or other significant changes in plant status. This information exchange can be accomplished at the EOF when all of the three states are represented.

1.19.2 If requested by offsite agencies, provide DLC Liaisons to the offsite Emergency Opertaions Centers. DLC Operations and Maintenance Instructors should be assigned to these functions wher requested. Periodically disseminate status information to these liaisons.

1.20 Continue emergency operations until such time as plant conditions have stabilized and other termination criteria of EPP/IP-6.2 "Termination of the Emergency" have been satisified.

E. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures
2. Beaver VAlley Power Station Operating Manual
3. Beaver VAlley Power Station Radilogical Control Manual
4. Title 10 Code of Federal Regulations Part 50, Appendix E
5. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

F. ATTACHMENTS

1. Checklist

CHECKLIST

NOTE

The use of this checklist is optional. It is provided as a convenience for the Emergency Director. It need not be filled out, nor retained. This checklist is not intended to replace the EPP/Instruction to which it is attached.

General Emergency

EPP/IP	STEP	OUTLINE	Initial	Time
I-5	1.1	Implement corrective actions		
I-5	1.2	Complete Initial Notification Form		
I-5	1.3	Notify designated Emergency Director		
I-5	1.4	Notify offsite authorities (EPP/IP-1.1)		
I-5	1.6	Notify the designated Emergency/Recovery Manager		
I-5	1.6	Activate TSC		
I-5	1.7	Activate EOF		
I-5	1.9,10	Complete follow-up notification		
I-5	1.12	Implement unit evacuation is a release if or is about to occur (EPP/IP-3.1, 3.2, 5.1). Consider other evacuations (EPP/IP-3.1)		
I-5	1.13	Have Public Information Department complete their notificaitons		
I-5	1.14	Initiate and continue dose proj. (EPP/IP-2.6)		
I-5	1.15	Initiate onsite radiation survey (EPP/IP-2.2)		
I-5	1.16	Initiate offsite radiation survey (EPP/IP-2.3)		
I-5	1.17	Recommend protective actiosn (EPP/IP-4.1)		
I-5	1.18	Use respirators if necessary		
I-5	1.19	Periodically disseminate info to offsite authorities		
I-5	1.20	Terminate when termination criteria (EPP/IP-6.3) have been met		

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NOTIFICATIONS

A. OBJECTIVE

This procedure provides instructions for notificaiton of offsite authorities and emergency response agencies in emergency situations. The procedure also addresses notification of selected off-duty BVPS personnel and the notification of selected DLC corporate staff personnel. Notification of offsite organizations is required for any of the four emergency classifications.

The Communications and Records Coordinator is responsible to ensure that all required offsite notifications are completed within the proper time frame following the declaration of an emergency.

The notification of other off-duty BVPS personnel is addressed in the EPP/Instruction for each emergency classification. The dissemination of information to personnel and the news media is addressed in EPP/IP-9.1, "Emergency Public Information Plan--BVPS".

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.

   and/or

2. An existing emergency condition has been reclassified to a higher emergency category, and/or, a significant deterioration in conditions has occurred.

   and/or

3. The emergency situation has been corrected and the emergency terminated, and recovery operations have begun.

C. PRECAUTIONS

1. Most radio communications, including the DLC Industrial Radio System, can be intercepted by relatively inexpensive and commercially available scanners, or similar radio receivers. All initial notificaitons and follow-up notifications shall be made by telephone as a primary means, with radio used only as a backup in the event telephone systems are inoperative during an emergency. This protocol will minimize the spread of rumors, minimize congestion of telephone circuits, and minimize undue public anxiety. In those cases where radio communications are necessary, the use of such equipment and the wording of transmissions will be in keeping with this protocol.

2. No press releases onthe incident shall be made prior to completion of all notifications, and will be made only by Duquesne Light Company Public Information Division(PID) personnel. Do not provide information to any individual whose identify is unknown, or to any organization not listed on the Emergency Notificaiton Call-list. Relay all such calls for information to DLC PID (412-456-6279 or 6000), or to the local emergency services organization in the appropriate state.

3. Insure that "EPP" switches associated with telephones in the Control Room are positioned in the EPP position during emergency operations.

D. GUIDANCE AND CRITERIA

1. Initial Notificaiton Content

1.1 The initial contact with offsite agencies is generally made to a communications operator or other similarly qualified individual. Thus, the initial notifications must be simple, brief, and factual. Avoid the use of jargon, abbreviations, or language which might be confusing or misunderstood. The intent of the initial notificaiton is to have this individual notify the appropriate personnel in the offsite agencies that an emergency condition has been declared. Once notified, appropriate individuals will call back to the station for additional information.

1.2 A message form is provided for all classificationsof emergencies to facilitate accurate notifications to offsite personnel. Identical message forms have been provided to the primary offsite agencies.

2. Notificaton Sequence

2.1 Notifications shall be made to all offsite authorities and other individuals listed on the Emergency Notificaton Call-list by the on-duty shift personnel immediately following the declaration of an Alert, Site Area, or General Emergency by the Emergency Director.

2.2 Unusual Event notificaitons shall be made to all offsite authorities and other individuals listed on the Emergency Notificaton Call-list within one hour from the declaration of the emergency.

2.3 All notificaitons, regarding emergency conditions, to the USNRC shall be made in accordance with BVPS OM Chapter 48.10 using the EMS red hotline phone and Figure 48-35 (in lieu of Attachment 1 to this EPP/IPO.

2.4 If an abnormal event occurs, and this event does not constitute an emergency condition as described in EPP/Instruction 1, but is reportable to the USNRC pursuant to BVPS OM Chapter 48, DLC PID should be notified of the event for a possible press release. If station management deems it appropriate, a courtesy call should be made to PEMA, BCEMA, HCOES, CCDSA, and DLC Public Information on a timely, but not necessarily on an immediate emergency basis. If the reportable abnormal condition occurs during a backshift, consideration should be given to waiting until the start of the daylight shift to make this notification.

2.5 The following notification sequence has been established by the jurisdictions within the emergency planning zone:

2.5.1 Beaver County Emergency Management Agency (BCEMA)
2.5.2 Pennsylvania Emergency Management Agency (PEMA)
2.5.3 Columbiana County Disaster Services Agency (CCDSA)
2.5.4 Hancock County Office of Emergency Services (HCOES)
2.5.5 US NRC Region 1 (Via OPX hotline--red phone)

For General Emergencies, the following agencies will be notified directly by BVPS. For lesser emergencies, these notificaitons are made by the respective counties.

2.5.6 Ohio Disaster Services Agency (ODSA)

2.5.7 West Virginia Office of Emergency Services (WVOES)

BCEMA makes backup notifications to CCDSA and HCOES. PEMA activates DER/Bureau of Radiation Protection, which in turn contacts the station for additional technical information. PEMA also contacts the Ohio Disaster Services Agency, and the West Virginia Office of Emergency Services.

2.6 The remaining notificaitons are made in keeping with the sequence provided on the Emergency Notificaiton Call-list.

3. Follow-up Notification

3.1 The follow-up notification serves two purposes: The first is to provide technical information on the emergency directly to those individuals qualified to use the data. The second is to provide a means for offsite authorities to verify the authenticity of an emergency notification.

3.2 Attachment 2, Follow-up Notification Form, is similar in format to the Initial Notificaiton Forms, but with a more extensive technical content. Unlike the Initial Notification Form, it is not intended to be relayed word-for-word. The objective of the form is to standardize the information provided to offsite agencies. Primary offsite agencies have been provided with copies of the form.

4. Verification

4.1 All notificaitons made to offsite agencies will be verified by the offsite agencies. The follow-up communications in response to an initial notification is the primary means of verificaiton.

4.2 To further ensure authenticity, offsite authorities will only accept notification from the following individuals at the station:

4.2.1 Shift Supervisor

4.2.2 Shift Foreman

4.2.3 Emergency Director

4.2.4 Communications and Records Coordinator

4.2.5 Station Superintendent

5. Subsequent Notifications

5.1 If it becomes necessary to reclassify the emergency to a higher (or lower) classificaiton, the Initial Notification Form appropriate to the new classification should be completed and the notifications made in the same manner specified for the initial notification of an emergency.

5.2 When appropriate, offsite authorities and others listed on the Emergency Notificaiton Call-list shall be notified that the emergency condition is terminated and, if applicable, that a recovery organization has been established.

E. PROCEDURE

1. Upon declaration of an emergency, the Emergency Director (Shift Supervisor, until relieved) will compose the appropriate Initial Notification Form, and complete a Follow-up Notificaiton Form, or direct that this be done. The Follow-up Notification Form should be updated as necessary as information changes.

NOTE

The Emergency Director is the only individual authorized to declare an emergency and to recommend protective actions to offsite authorities. When the EOF is activated, this authority is transferred to the Emergency/Recovery Manager. The Communications and Records Coordinator or the Offsite Agency Laison may relay the approved recommendation.

NOTE

On Attachment 1, Emergency Initial Notification Form, the "time" (blank 2) refers to the time at which the abnormal event was declared to be an emergency condition -- not the time when the initial indication of the abnormal event or alarm was observed.

2. The Emergency Director will assign an individual fromthe on-duty shift to serve as Communications and Records Coordinator (normally the NSS Administrative Assistant) until relieved by the designated individual. This individual will make notifications to the individuals and organizations listed on the Emergency Notificaiton Call-list (Attachment 1) as follows:

2.1 Contact each organization or individual using the telephone number listed. If the telephones are inoperative, utilize the specified back-up.

2.2 When the party answers, read the introduction paragraph on the notification form and pause to allow the individual to obtain his copy of the form (PEMA, HCOES, CCDSA, AND BCEMA only), or blank paper on which to record the notificaiton.

2.3 Read the text of the notification, emphasizing the variable information The initial notification must be kept simple and non-technical.

2.4 Have the recipient read back the message and if necessary, correct any errors.

2.5 Note the name of the individual contacted and the time of the contact on the Emergency Notificaiton Call List.

2.6 Direct the party contacted to notify the appropriate individuals in their organizations in accordance with the organization's emergency plans. Remind the party contacted that a callback is required from the designated individual.

2.7 Proceed to the next party on the call-list.

2.8 If a party can not be contacted in a reasonable period of time, bypass that party and proceed down the list. After the other notificaitons are complete, re-attempt to contact any bypassed parties. If a party still can not be reached, consider other means such as dispatching a courier, relay through another party, or similar actions. Every effort must be made to contact the five organizations listed in Section D.2.4 of this procedure.

2.9 When the parties call back for further information, note the time and the name of the individuals on the call-list. (Use a new list if there is insufficient room to record the call-backs.) Provide the information available from the current Follow-up Notification Form. If the party requests information not on the form, make reasonable efforts to obtain and relay the information, if consistent with completing notificaitons.

2.10 If a party not specified on the call-list requests information, refer the party to either the DLC Public Information Division (412-456-6279 or 6000), or to the local emergency services organization in his/her community.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness and Implementing Procedures.

2. Title 10 Code of Federal Regulations Part 50, Appendix E

3. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

G. ATTACHMENTS

1. Emergency Initial Notification Form

2. Emergency Notification Call-List

3. Follow-up Notification Form.

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BEAVER VALLEY POWER STATION

Initial Notificaiton Form

INSTRUCTIONS

1. Read the following:

"This is the Beaver Valley Power Station. The following is a notification of an emergency. Record the information to follow on the Emergency Initial Notification Form:

2. This is ______________________ (Name) title ______________________ (Emergency Organization Title)

of Duquesne Light Company.

3. Emergency Class: _____ UNUSUAL EVENT _____ SITE EMERGENCY

_____ ALERT _____ GENERAL EMERGENCY

4. Radioactivity: _____ Has Not Been Released _____ Is Being Released

_____ Release Has Been Stopped

_____ Within Plant _____ From Plant

5. Type of Release: _____ Airborne _____ Waterborne _____ Surface Spill

6. Protective Actions: _____ None Recommended _____ Recommended as follows:

____

7. This notification was made at ______________ (Time) on ______________ (Date).

Return phone number is (412) 643-8000.

8. Please repeat back the information you have recorded to ensure accuracy.

9. Notify the appropriate individual(s) of your organization or agency.

10. CODE ______________________________.

FOR BCEMA/PEMA/HCES/CCDSA/USNRC ONLY:

11. Request the appropriate individual in your organization contact the station for additional information if deemed necessary.

Duquesne Light

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EMERGENCY NOTIFICAITON CALL-LIST

NOTE: The majority of the telephone numbers listed below are numbers designated for emergency purposes only. In most cases, these number should not be used for non-emergency communications. On weekdays between 8 am and 4 pm, use the normal phone first.

NOTE: Ensure that the ECC "EPP/Normal" switches on the phones are in the "EPP" position to allow call-backs on 8000/8001/8002 to be routed to the ECC.

NOTE: Calls to the offsite agencies listed on this sheet must be made in the sequence shown, as rapidly as possible following declaration of emergency, and prior to any notificaitons on remaining sheets. If one of the organizations can not be reached, continue with the next, and then re-attempt to notify the bypassed orgaaization before continuing with the rest of the notificaitons.

Organization/Individual	Normal Business	24-hr Emergency Number Primary	24-hr Emergency Number Alternate	Name of Contact	Time/Init
1. Beaver Co. Emerg. Management Agency (BCEMA) Dispatcher (24-hrs):Relay to Mr. R. Chiodo	774-1049	775-0880	DLC Radio		
2. Pennsylvania Emerg. Management Agency (PEMA) Duty Officer (24-hrs)	717-783-8150	717-783-8150	Relay through BCEMA		
3. Columbiana Co. Disaster Services Agcy (CCDSA) Dispatcher (24 hrs):relay to Mr. M. Lippiatt	216-424-9725	216-424-7255	DLC Radio		
4. Hancock County Office of Emerg. Services Dispatcher (24 hrs)*:relay data to Mr. A. Kondik	304-564-3311	304-564-3311	DLC Radio		
*Ask courthouse SWBD operator for dispatcher during normal working hours. This is a direct line after hours.					
5. US Nuclear Regulatory Commission Duty Officer (24-hrs)		OPX red hotline 102920951-0550 301-427-4056 HPN Black Hotline or 1-301-492-7000			
GENERAL EMERGENCIES ONLY					
5a Ohio Disaster Services Agency (ODSA)	614-889-7157	614-889-7150	Relay through CCDSA		
5b West Virginia Office of Emergency	304-348-5380	304-348-6370	Relay through HCOES		

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EMERGENCY NOTIFICATION CALL-LIST (Con't)

NOTE: See notes on Page 1

	Organization/Individual	Telephone	Alternate	Name of Contract	Time/Init
6.	BVPS-1 Superintendent H. P. Williams	PAX 5101	(H)*	________	________
7.	BVPS-1 Operations Supervisor L. Schad	PAX 5104	(H)*	________	________
8.	Shippingport Atomic Power Station	PAX 702/710	DLC Radio (SAPS Guardhouse)*	________	________
9.	BVPS Unit 2 Construction:R. Swiderski (Backshifts and weekends:ranking DLC-CDN or SBI Guard)	643-8800	643-8801 DLC Radio	________	________
10.	DLC Public Information Department (Notify one)				
	J. D. Frank	PAX 66273	(H)*	________	________
	D. Messner	PAX 66279	(H)		
	F. Skledar	PAX 66779	(H)		
	J. M. Sasala	PAX 66527	(H)		
	J. F. Grogan	PAX 66281	(H)		
	K. A. Scherer	PAX 66269	(H)		

Each individual listed below will notify the next higher level of management consistent with the severity of the emergency. The Station Superintendent or designated alternate notifies the Manager, Nuclear Operations*.

Manager, Nuclear Operations T. D. Jones	See Directory	(H)*
V. P. Nuclear Division J. J. Carey	See Directory	(H)*

* *

ACTIVATION OF TSC/EOF ORGANIZATION VIA BEEPERS: (Note: Activate code-a-phone answer machine)

Beaver County beepers (ask operator to tone-out # __*) 843-9220

Pittsburgh Area beepers (activated by telephone-no operator) 1-464-__*

*Numbers available from Nuclear Shift Supervisor

*these personnel have beepers.

(H) Home Phone

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EMERGENCY NOTIFICATION CALL-LIST (Con't)

NOTE: The following organizations are notified only for the accidents noted in parenthesis next to their name.

11. U. S. Coast Guard (All offsite releases, actual or imminent)				
Marine Safety (Pittsb[illegible]h)	1-644-5808/1-644-6833	800-424-8802	________	________
12. U. S. Corps of Engineers (liquid releases)				
New Cumberland Dam (downriver)	614-537-2571	Relay through	________	________
Montgomery Dam (upriver)	643-8400	BCEMA	________	________
13. Midland Water Plant (liquid releases) (Notify one)				
Mr. D. Craik		643-4735	________	________
Mr. McHaffie				
Mr. Haywood				
14. East Liverpool Water Plant (liquid releases)				
Mr. Francis Wise		216-385-5050	________	________
15. Chester, WVA Water Plant (liquid releases)				
Notify via HCOES	304-564-3311	DLC Radio	________	________
16. Westinghouse Atomic Power Division (Alert & higher) (Notify one)				
Mr. D. Campbell				
Mr. D. Lokay				
Mr. R. Von Osinski			________	________
17. INPO (Alert & higher)	404-953-0904	N/A	________	________
18. National Weather Service (Site & General Emergencies)	1-644-2888	N/A	________	________
19. American Nuclear Insurers				
Fire/All Risk Emergencies	800-243-3172	800-243-3173		
Radiological Nuclear Emergencies	203-677-7305		________	________

In addition to the above, the following organizations, although not directly notified are authorized to receive information regarding the emergency:

DER/Bureau of Radiation Protection, Pennsylvania	717-787-3479	Hotline
DER/BRP hotline will be operative upon activation of DER/BRP by PEMA.		
State of Ohio Disaster Services Agency	614-889-7157	via CCDSA
State of West Virginia Office of Emergency Services	304-348-5380	via HCOES
West Virginia Dept. of Health/Radiation Protection	304-348-0691	304-348-3526

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EMERGENCY NOTIFICSAITON CALL-LIST (Con't)

The following organizations are not normally notified directly in the event of an emergency at BVPS, but may be contacted if particular emergency conditions warrant.

Pennsylvania State Police (Lt. J. Render)	775-5991	
Pennsylvania State Police (Chippewa Barracks)	843-5100	DLC Radio
Laurel Pipeline Co. (Mr. T. Gordon)	1-264-7432	
Mobil Pipeline Co.	201-754-3546	
National Transit Co. (Mr. E. Bernard)	1-225-OHIO	
Ashland Pipeline Co.	800-354-8850	
Freedom Station	1-774-2020	1-216-866-3588
Buckeye Pipeline Co.	1-215-967-313'	
DOE RAP/IRAP Brookhaven Area Office	516-282-2200	516-282-3424
Medic-Rescue Ambulance Service	728-3620	775-0880
Community Ambulance	1-728-6612	775-0880
Shippingport Fire Department	775-0880	Relay through BCEMA
Aliquippa Hospital Emergency Room	1-857-1274	Relay through BCEMA
Aliquippa Hospital Nuclear Medicine	1-857-1275	Relay through BCEMA
Beaver County Medical Center	728-7110	Relay through BCEMA
Presbyterian University Hospital Emergency Room	1-647-3333	
Radiation Emergency Response Program		
Dr. Neil Wald-Dept. of Radiation Medicine		
Dr. Albert Spritzer		
Crucible Steel Company 10th Street Gatehouse	643-1100 x2802	
Linde Air Company (Mr. Jeward Ypma)	643-1100 x2784	
McIntosh Hemphill (E. W. Bliss)		
Mr. R. Ansevin	643-8600	
Mr. D. Lemesh	643-8600	
Bruce Mansfield Power Station		
Plant Superintendent (D. Bodar)	643-5000	
Assist. Superintendent (D. Thomas)	643-5000	
Shift Supervisor	643-5000	
Conrail Division Supervisor	1-928-7206	
Pittsburgh and Lake Erie Chief Dispatcher	261-0650	
US Weather Bureau-Pittsburgh		
Air Polution Meteorologist	1-262-5179	
Forecast Office (24-hr)	1-644-2882	1-644-2888
Coraopolis Office	1-644-2391	

NOTE: The phone numbers listed above are updated on the annual review. More up-to-date numbers are available in the monthly and quarterly emergency telephone number checklists, and are available in the Control Room.

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BEAVER VALLEY POWER STATION

Follow-up Notification Form

The following data represent the most current and most accurate information, projections, and/or prognosis available at the time this notificaiton was made.

TIME: ______________ Date: ____________ By: ___________________________.

Return phone number: 412 643-8000

1. Affected Facility: Beaver Valley Power Station .

2. Unusual Event/Alert Site/General Emergency Declared at: ______ on: ______________
Time Date

3. Cause of Emergency ___________________________

4. Current Plant Status: ___________________________

Conditions: Stable/Unstable Reactor: Shutdown/At Power

Equipment Damage: Minor/Major/

Cooling: Normal Cooldown/Safety Injection Cooldown/NA

5. Radioactivity Release (If Applicable)

Type of Release: Liquid/Gaseous Release to: Ohio River/Atmosphere

Time Start: __________ Release Stopped: Yes/No/NA at: __________

Potential for Release: Yes/No Additional Release? Yes/No

Wind Speed (mph) ___________________________

Wind Direction From N/NE/NW/S/SE/SW/E/W

Stability Class ABC/D/E/FG

6. Projected Dose or Actual Dose Rate:

	Projected Dose (REM)	Actual Dose Rate (REM/HR
Site Boundary		
5-mile radius		
10-mile radius		

7. Recommended Protective Action: No protective action necessary/

Shelter within _____ mile radius/Evacuate within ______ mile radius

Duquesne Light

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Directions: The Dose Projection Coordinator will relay this info to the NRC (via HP Hotline), to DER/BRP (via White Hotline), and to other appropriate agencies (Ohio and West Virginia).

RELEASE TO OHIO RIVER

	Actual		Projected	
Time of Release Start	______		______	
Release Duration	______	hrs.	______	hrs.
Release Volume	______	gal.	______	gal.
Total Activity	______	Ci.	______	Ci.
Radionuclide(s) in Release	______		______	
	______		______	
	______		______	
	______		______	

River Water Sampled:

Time/Date of Sample	______	
Location of Sample	______	
Measure River Activity	______	Ci/cc.
Radionuclides Present	______	
	______	

ATMOSPHERIC RELEASE

Release Data:	Actual		Projected	
Time of Release Start	______		______	
Release Duration	______	hrs.	______	hrs.
Release Rate	______	cc/sec	______	cc/sec
Noble Gas Release Rate	______	Ci/sec	______	Ci/sec
Radioiodine Release Rate	______	Ci/sec	______	Ci/sec
Release Height	______	m.	______	m.

Meteorology Data:

Wind Direction	______	
Wind Speed	______	mph
Stability Class	______	
Precipitation	______	

Type of Accident: VCT Rupture/GST Rupture/MSL Break/FH Accident/WGDT Release/LOCA
OTHER: ______________________________

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COMMUNICATIONS AND DISSEMINATION OF INFORMATION

A. OBJECTIVE

This procedure describes the communications systems that are available for emergency use, their location, and their function, and describes general communications procedures. In addition to this procedure, Chapter 40 of the Station Operating Manual describes the use of communications systems.

The Communications and Records Coordiantor is responsible to ensure the actions outlined in this procedure are implemented.

A detailed listing of telephone numbers is not attached to this procedure. However, a telephone directory of Station personnel is updated and issued monthly. This directory is available in the Control Room and in the Emergency Control Center.

B. PREREQUISITIES/INITIAL CONDITION

None

C. PRECAUTIONS

None

D. GUIDANCE AND CRITERIA

1. General

1.1 Communications are essential for the correct and rapid initiation of the Emergency Preparedness Plan. The ability to activate the onsite emergency organization, the ability to notify the offsite authorities, and if necessary, the ability to implement the appropriate protective action for the populace in affected areas offsite depend on timely and accurate communications.

1.2 The Beaver Valley Power Station has five independent systems for outside communication to Federal, state, county authorities, to corporate management, and to offsite support groups. These are:

1.2.1 The Bell System

1.2.2 The Duquesne Light Company Private Automatic Telephone (PAX) System

1.2.3 USNRC ENS/HPN Hotline Network, and DER/BRP Hotline

1.2.4 Duquesne Light Company System Operator Direct Line

1.2.5 Duquesne Light Company Industrial Radio System

These systems are briefly described in the sections to follow. A matrix of locations versus communications capability is provided as Attachment 1.

For onsite communications, the plant alarm system, the station paging system, and a two-way alarm system betwen BVPS and SAPS provides communications for station personnel.

2. Bell System

2.1 The Beaver VAlley Power Station site is provided with telephone service by the Bell of Pennsylvania Telephone Company. All Bell telephones (prefi 643-) are direct lines and can all be used simultaneously.

2.2 The Bell System is the primary communcations system because of its ability to provide communications with a large number of parties over a wide area, and for the privacy of the communications.

2.3 The Bell phones are routinely used by station personnel performing normal station activities, thus no periodic testing is required.

2.4 There are normally two independent-ringing telephone lines to the Control Room. These are 643-8001 and -8002. In the event of an emergency, however, three sequential-ringing telephone lines are available. Any call to the Station via 643-8000, -8001, -8002 will be automatically transferred to one of the other two lines, should that particular line be in use. An "EPP" switch on the communications panel establishes this capability.

3. Duquesne Light PAX

3.1 The DLC PAX System is an automatic exchange system which provides for numerous simultaneous intra-station (including SAPS) conversations, and ⁱx simultaneous conversations offsite to other DLC facilities and offices. Two of the offsite trunks are via microwave links which could provide offsite communications during a failure of landlines (due to flooding, downed lines, etc).

3.2 During normal working hours, the PAX switchboard operator (Pittsburgh) can interconnect a PAX line with the Bell System. This capability does not exist after normal working hours.

3.3 Due to the limited number of possible offsite communications via PAX, messages must be as brief as possible to minimize congestion of the PAX trunks. PAX should be used for all onsite telephone communicaitons.

3.4 The PAX system is routinely used by station personnel performing normal station activities, thus no periodic testing is required.

4. USNRC ENS/HPN Network/DER/BRP Hotline

4.1 There are three separate and independent telephone "hotlines" which provide for direct communications with the USNRC and/or DER/BRP over dedicated lines. These lines are engineered to be immediately available during periods when the various telephone exchanges are congested with other calls.

4.2 The DER/BRP "white" hotline is an automatic ringdown system with transceivers at the Control Room and at DER/BRP headquarters in Harrisburg, PA. This phone, when picked up, automatically rings at the other end. This phone circuit has been designated for the dissemination of technical data on the emergency to DER/BRP personnel to provide for offsite accident assessment. It is not used for initial notification since the DER/BRP is not a 24-hr per day operation.

4.3 The USNRC ENS network (circuit GPO-1474) ("red" phone) is an automatic ringdown system with transceivers at four locations on site and at the NRC offices in King of Prussia, PA and in Bethedsa, Md. This circuit has been designated for making immediate notifications required in 10 CFR 20.403 within one hour of the time a reactor is not in a controlled or expected condition of operation.

4.4 The USNRC HPN "black phone" (circuit GDA-0260) is a dedicated dial-up system connecting the site wiht the NRC in Bethedsa and in King of Prussia. This circuit has to be dialed (#23 Region 1--#22 Bethesda), but provides a dedicated line over which to disseminate technical data to the NRC after the initial notificaitons have been made and the NRC EOC has been activiated. The HPN phone can be used for initial notification if the ENS hotline <u>and</u> commercial Bell lines are inoperative.

4.5 The NRC red phones, black phones and the DER/BRP white phones shall all be tested monthly per EPP/IP 7.3

5. <u>Duquesne Light System Operator Direct Line</u>

5.1 The DLC System Operator Direct Line is a magneto-powered phone circuit routinely used for communications between the Control Room and the System Operator in support of normal operations. During an emergency, this circuit could be used (via relay) to make offsite notifications in the rate event the Bell System, the PAX system, and the DLC Radio System were inoperative or ineffective.

5.2 The System Operator Direct Line is routinely used by station personnel performing normal station activities and is thus exempt from periodic testing.

6. <u>DLC Industrial Radio System</u>

6.1 The DLC Industrial Radio System is comprised of base, remote control relay, mobile, and portable units oeprating on one of two VHF frequencies. These frequencies are approximately 150 MHZ and 50 MHZ. The system serves BVPS, SAPS, and the DLC Power Stations Department, and other corporate groups. Although the system is common to all users, tone operated squelch provides for selective calling.

6.2 The 150 MHZ network (see Attachment 2) consists of the following locations at:

6.2.1 Shippingport Hill (main base station)
6.2.2 BVPS Unit I (Control Room)
6.2.3 Hancock County Communications Center (for HCOES)
6.2.4 Columbiana County Communications Center (for CCDSA)
6.2.5 Beaver County Communications Center (for BCEMA)
6.2.6 Pennsylvania State Police (Chippewa Barracks)
6.2.7 Interim Technical Support Center/Emergency Operations Facility
6.2.8 Alternate EOF (South Heights - T & D Building).

6.3 The Shippingport Hill base station is controlled by remote consoles located at the Control Room and at SAPS. Four remote handsets at BVPS-1 provide extensions to the Control Room console. The hanasets are located at the NSS Office Communications Console, at the plant shutdown panel, at the NSOF area in the Control Room, and one in the interim TSC/EOF areas. The operating consoles provide a choice of four private lines (three currently in use).
They are:

6.3.1 PL1 -- Used for communication with System Operator, distribution switching

6.3.2 PL2 -- Used for emergency communications with BCEMA, HCOES, CCDSA and PA State Police ONLY

6.3.3 PL3 -- Used for communicaitons with offsite monitoring teams, and all other routine uses.

6.3.4 PL4 -- Spare

The private line feature provides for tone-operated squelch on transmit and receive. When the PL is enabled, only transmitters broadcasting the appropriate PL tone (1, 2, or 3) will be heard on the console. If the PL is disabled (by lifting handset), the console or handset will receive any transmission. Any transmissions from the Control Room console or handsets will be received only by those receivers having the same PL selected as the Control Room console. Any remote receiver without a PL feature, or with the PL feature disabled will receive all transmissions, regardless of source.

The PL feature is not a means of carrying on four simultaneous conversations -- only one conversation can be held at any one time -- nor is it a means to establish privacy. The sole purpose of the PL feature is to prevent reception of unwanted message traffic.

6.4 The base stations at HCOES, CCDSA, AND BCEMA (in future) always transmit on PL2, and will receive only PL2 transmissions, if the PL feature on the receiver is enabled. If the PL feature is disabled, these stations will receive all transmissions on 150 MHZ. The transceivers located in the ECC (desk unit), at the Chippewa Barracks, and at BCEMA (currently), receive on PL2, but do not have PL on transmit. The base station at the interim TSC/EOF receives and transmits on PL1. All walkie-talkies and BVPS mobile units receive on PL3, but do not have a PL on transmit. Refer to Attachment 3.

6.5 A "takeover" button on the Control Room console will override the SAPS console and any extension handsets.

6.6 A low band system on approximately 50 MHZ is used by BVPS security guards and by DLC Transmission and Distribution Department. There is a control console located in the BVPS Control Room and four remote consoles located at various T&D facilities. There is no PL feature on the low band. Handsets are located in the Control Room. A "takeover" button on the Control Room console overrides all other consoles. There is only one base station for the low band system.

6.7 The DLC Radio System is the primary means of communication with offsite monitoring teams and is the first alternate to Bell phone for notification of offsite emergency response organizations.

6.8 The system is routinely used by station personnel. The entire communications system is tested annually in accordance with the providions of the FCC license. The communications links between the Control Room the three risk counties, and the Pennsylvania State Police is tested weekly. Portable transceivers maintained inthe emergency kits are tested periodically.

7. Station Page Party

7.1 The page party system is a five line telephone system which uses loudspeakers to page an individual party. The system provides for paging individuals within the plant from any other page station, and if necessary, communicating with them. Since the five lines are common to all stations, conference calls are possible.

7.2 During emergency conditions the PAX system, if available, should be used for answering a page in order to free the system for communicaitons from emergency squad members, survey teams, and others not having access to PAX phones.

E. PROCEDURE

1. To the maximum extent possible, all communications regarding the existance of severity of the event, or recommendations of protective actions, will be made on communications circuits which cannot be readily intercepted by persons outside of the emergency organizations. Telephone circuits shall be used as the primary means with radio used only as a backup. This protocol will minimize the spread of rumors, minimize congestion of telephone communications and minimize the undue public anxiety. In those cases where radio communications are necessary, the use of such equipment and the working of transmissions shall be in keeping with this protocol.

2. In addition to the provisions of Step 1, messages should be worded to avoid possible errors in transcription/interpretation in accordance with the following guidelines as applicable:

   2.1 To the extent possible avoid the use of technical jargon, particularly communications with offsite agencies.

   2.2 Ensure that the message is complete. Do not assume that the message recipient can supply the proper missing words, etc., necessary to make the message complete.

   2.3 Avoid the use of abbreviations. For example, millirem -- not "m-rem", "m-R".

   2.4 Read numbers "telephone number" style. Thus, 425 becomes "four-two-five" not "four hundred and twenty-five".

   2.5 Avoid the use of codes.

   2.6 Preface each communication with the title or name of the receiving party and your title or name. For example: "Beaver Valley Control Room, this is NW monitoring team.." Wait for the receiving party to acknowledge the contact prior to relaying any information.

   2.7 Since some equipment in the radio system is voice actuated, it is wise to clear your throat or make another noise prior to starting your message. This will prevent the loss of the beginning of your message.

   2.8 After the communication is complete, request the receiving party to read the message back, if appropriate (particularly if numerical data was relayed).

   2.9 For radio communications, end message with an appropriate termination phrase. For example: "...SW monitoring team, out".

3. The Communications and Record Coordinator will log all communications to or from the Control Room on provided data forms.

4. To minimize the spread of rumors, refer all communications from news media or from the public to the Duquesne Light Public Information Department or to the appropriate emergency organization in the caller's state:

4.1	Duquesne Light Public Information	PAX 66779/66279 or 1-456-6000
4.2	Beaver County, PA (24-hr dispatcher/Director)	1-775-0880/774-1049
4.3	Hancock County, WV (24-hr dispatcher/Director)	1-304-564-3311/723-3316
4.4	Columbiana County, OH (24-hr dispatcher/Director)	1-216-424-7255/9725

5. Once the Emergency Operations Facility (EOF) is activated (Site Area or General Emergencies), encourage authorized callers to contact the Offsite Agency Laison at the EOF for information. This will minimize the number of communications and improve the accuracy of information dissemination. Provide Offsite Agency Laison with periodic situation reports. The frequency of the reports should be consistent with the rate of change in the situation report of no change in the situation is as important as a report of a change.

6. The Duquesne Light Company Public Information Department is responsible for providing briefings and press releases to the news media. DLC PID will add a representative to the Technical Support Center (TSC). TSC personnel provide information on the plant status as requested. No information should be held back from PID by BVPS personnel. All press releases shall be approved by PID and the V.P., Nuclear Division. Station personnel shall ensure that the information provided to PID is current and consistent with the information provided to offsite emergency organizations. EPP/IP-9.1, "PID Plan", provides additional information on the release of information to the news media.

7. For emergencies in which the public is notified (sirens, EBS, etc) the commercial Bell network near the plant can be expected to be unavailable during overloading. In this event, the following can be performed to notify agencies which can normally only be notified by Bell telephone:

   7.1 Using the PAX system, obtain an outside line by dialing "6" then "C" requesting this of the DLC operator. This is not normally author Explain to the operator the emergency nature of the call. This call can be placed on a Pittsburgh exchange.

7.2 Use the DLC Industrial Radio System to notify the DLC System Operator request that he make the emergency calls.

7.3 To contact PEMA, use the DLC Industrial Radio System to notify either BCEMA or the Pennsylvania State Police, and request that they relay notificaiton via a state teletype or radio network.

7.4 To contact Aliquippa Hospital, Beaver County Medical Center, the ambulance service, or the fire department, use the DLC Industrial Radio to contact BCEMA for relay via the County fire and EMS nets.

7.5 The portable transceiver on frequencies 155.130 MHZ (Midland and Shippingport Police) and/or 155.610 MHZ (Beaver County Net) in the NSS office could be used to relay offsite notifications in the event both the DLC Industrial Radio System and commerical bell system are unavailable. Additionally, SAPS has 450 MHZ and 164.225 links with Bettis.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures
2. Beaver Valley Power Station Operating Manual
3. Title 10 Code of Federal Regulations Part 50, Appendix E
4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

G. ATTACHMENTS

1. Communications Matrix
2. DLC Radio Matrix
3. Operating Instructions for ENS and HPN Hotline Phones.
4. Using the Control Room and TSC Auto-Dialer and Answering Machine to make call-outs.

Duquesne Light

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COMMUNICATIONS MATRIX

	Page Party System	Station Alarms	153.47 MHZ Radio	47.3 MHZ Radio	Bell Phone	PAX	Direct Line	ENS	HPN	DER/BRP Direct	Intercom	Beepers	Head-Set Circuits (Ops)	Head-Set Circuits (Radcon)
BVPS-1 Control Room (NSS Office)	●	●	●	●	●	●	●	●	●	●	●	●		
BVPS-1 Control Room	●	●	●	●	●	●	●	●			●		●	●
Op. Support Center (OSC)	●	●	●	●	●	●		●					●	●
Technical Supp. Ctr. (TSC)		●	●		●	●		●	●	●	●		●	●
Emergency Ops. Facility (EOF)		●	●		●	●		●	●	●	●		●	●
Alternate EOF			●	●	●	●								
Beaver County EMA			●		●									
Hancock County OES			●		●									
Columbiana County DSA			●		●									
Pennsylvania EMA					●									
DER/BRP					●					●				
PA State Police			●		●									
Ohio DSA					●									
Ohio Highway Patrol			●		●									
West Virginia OES					●									
USNRC					●			●	●					
USNRC Reside... Insp	●	●			●	●		●	●					
Other DLC Facilities			●	●	●	●								
DLC System Dispatcher			●	●	●	●	●							
DLC Headquarters					●	●								
Shippingport Atomic PS			●	●	●	●	●					●		
Rad. Ops Center	●	●			●	●			●					●
General Station Areas	●	●				●								
BVPS-2	●	●	●	●	●	●								
Monitoring Teams	●	●	●		●									
DLC Response Personnel (Home)					●							●		
Main Guard House	●	●		●	●	●						●	●	
EA and DP Room	●	●	●		●	●				●			●	●

DLC INDUSTRIAL RADIO SYSTEM

LOCATION	153.47 MHz		47.3 MHz		Other
	Xmit	Rec	Xmit	Rec	
NSS Office/ Communications Console	1,2,3	1,2,3,All	Yes	Yes	153.47 PL1 155.130 155.610
NSOF Desk/ Control Room	1*,2*,3*	1*,2*,3*,All	Yes	Yes	-----
Plant S/D Panel	1*,2*,3*	1*,2*,3*,All	----	----	-----
SAPS	1,2,3	1,2,3,All	----	----	450 Mhz 164.225 MHz
HCOES	2	2,All	----	----	-----
CCDSA	2	2,All	----	----	extensions at OHP CC Sheriff
BCEMA	----	2,All	----	----	-----
PA State Police	----	2,All	----	----	-----
BVPS Sec. Guards	----	----	Yes	Yes	-----
BVPS Mon. Teams	----	3,All	----	----	-----
Interim TSC/EOF	1, 2, 3	1, 2, 3, All	----	----	-----
Alternate EOF	1, 2, 3	1, 2, 3, All	----	Yes	-----

* As selected on NSS Console

OPERATING INSTRUCTIONS FOR NRC

ENS AND HPN HOTLINE PHONES

A. PURPOSE

This attachment provides instructions for the use of the two NRC hotline telephone systems. These phone systems are designated for emergency use only.

B. DISCUSSION

The Emergency Notification System (ENS) Hotline is an automatic ring-down telephone system. When any of the red hotline phones onsite are lifted, the hotline phones at the NRC's Headquarters Operation Center will ring automatically--no dialing is necessary. 10 CFR 50.72 provides that this phone must be continuously manned (off-hook) once used until directed otherwise by the NRC.

The Health Physics Network (HPN) is a dedicated-direct line system link NRC Health Physics personnel and DLC Health Physical personnel. This system is a dial system, the use of which is initiated by the NRC. DLC personnel will not initiate calls on this network unless directed by the NRC, or unless the ENS has failed.

C. PROCEDURE

1. ENS Red Phone, lift the receiver. When the party at the other end answers, provide emergency information from the Notification of Significant Events Checklist (Figure 48-35, BVPS OM).

1.2 Once the information is relayed, stay on the line until relieved by another individual, or as directed by the NRC.

1.3 If the ENS red phone is inoperative, first attempt notification via commercial Bell lines. Current telephone numbers are listed on the Emergency Notification Call-list (EPP/IP-1.1). If commercial Bell lines are inoperative, use the NRC HPN network, as described below. (The sequence described above was established by the NRC and must be followed).

1.4 If the ENS red phone has failed, notify the trouble line (identified on the phone) for repair.

2. HPN Black Phone

NOTE

The HPN black phone shall not be used by DLC personnel, except for periodic phone checks or as provided in paragraph 1.3, or as directed by NRC personnel. The instructions which follow are provided in case such operation is required.

2.1 Lift the receiver and listen for busy signal. If none exists, proceed as follows:

2.2 Dial the appropriate two digit individual station code:

2.2.1 NRC Region 1 Office . . . . #23

2.2.2 NRC Headquarters . . . . #22

2.3 If an error is made in dialing the first digit, cancel the call by dialing #1 or by waiting six seconds for the system to cancel the incomplete call. Once the second digit is dialed, wait until the called party answers, explain the error, wait for the party to hang-up, and redial.

2.4 If the HPN system is inoperative, report the trouble to (412) 227-7900, provide the following information:

2.4.1 Your name ______________________

2.4.2 Organization: Duquesne Light Company

2.4.3 Phone on which trouble was noted: ______________

2.4.4 Nature of problem: ____________________

2.4.5 Circuit: BVPS is station #33 on GDA02060

USING THE CONTROL ROOM AND TSC AUTO-DIALER

AND ANSWERING MACHINE TO MAKE CALL-OUTS

A. PURPOSE

This attachment provides instructions for the use of the auto-dialer and the answering machine to make emergency personnel call-outs. The Communications and Records Coordinator is responsible for implementation of this procedure.

B. PROCEDURE

1. General Sequence

1.1 Activate the answering machine in accordance with instructions provided in section 3 of this attachment.

1.2 Select the outgoing message tape appropriate to the class of emergency and place the tape in the outgoing tape player in accordance with the instructions of section 3.

1.3 Set the answering machine to answer and record incoming messages.

1.4 All dialing and conversation during the notification process will be done on the line to which auto-dialer is connected.

1.5 Depress the "Pittsburgh Beepers" button on the dialing unit. When the other party answers, you will hear two or three tones and then a dial tone. The Pittsburgh beepers are activated by computer.

1.6 Hangup the phone after each call is completed. This must be done to clear the line for additional calls.

1.7 Depress the "Beaver County Beepers" button on the dialer. When the other party answers (an answering service) say:

"This is the Beaver Valley Power Station. Please tone out beepers(*). This is an emergency."

* Number available from Shift Supervisor

1.8 Continue with other notifications in accordance with EPP/IP-1.1 and Attachment 2 to that procedure.

1.9 After five (5) minutes, repeat [at least three (3) times] steps 1.5 through 1.7 (tone out the beepers again, as to ensure activation and response of emergency personnel).

1.10 After sufficient time has elapsed for personnel to respond to the beepers, rewind the incoming message tape, play back the tape, and list those personnel who acknowledged the notification. If the primary designee cannot be reached, notify a designated alternate in the sequence provided in the monthly call list. Apprise the Emergency Director (Shift Supervisor until relieved) of any shortfalls in in personnel activation.

NOTE: If the beepers are used to notify personnel of an Alert emergency, the beepers should be resounded if the condition escalates to a Site Area or General Emergency, in order to activate EOF personnel.

1.11 When the answering machine is no longer in use, rewind the incoming message tape, insert the standby message tape and set the unit for auto-answering as in steps 3.1 and 3.2.

2. Use of the Auto-dialer

2.1 The auto-dialer is connected in the computer room. This line must not be in use for the dialer to operate. Since the dialer is an extension on this line, all of the phones on this line and the dialer must be off in order to clear the line and obtain a dial tone.

2.2 To place a call with the dialer, proceed as follows:

2.2.1 Proceed to the computer room where the auto-dialer is located.

2.2.2 Pick up the handset on the phone, press the button associated with the party you wish to call. It is not necessary to depress the ON/OFF button, as the device will turn-on when any call button is pressed.

2.2.3 The dialer will display the number dialed on the LCD display, and adjust the speaker (volume control on left side of dialer).

2.2.4 Upon reaching the appropriate party, commence the notification.

2.2.5 When the call is complete, hangup the handset.

2.2.6 Repeat the above for each additional party to be called.

3. Use of the Answering Machine

NOTE: Do not change machine controls when the RECEIVED-IN USE lamp it lit. Wait for the light to go out before proceeding.

3.1 Changing the Message Tape

3.1.1 With none of the control buttons depressed, open the rear tape player by lifting the small tab to the left of the unit's case.

3.1.2 Slide the tape cassette forward to remove it from the player.

3.1.3 Insert the correct tape in the slot with the full reel on the LEFT with the cassette opening facing out.

3.1.4 Press down on the cover to insert the tape cassette.

3.1.5 To verify that the proper tape is in place and to rewind the tape proceed as follows:

1. Position the control knob to the ANNOUNCEMENT position
2. Depress the ON button.
3. Depress the ANNOUNCEMENT TEST button until the RECEIVED-IN USE lamp lights.
4. Release the button to hear the tape. Adjust the volume control as necessary.
5. The tape will stop when the playback is complete and automatically rewind.

3.2 Setup for Automatic Operation

With the proper outgoing announcement tape in place, set up the answerer for automatic operation as follows:

3.2.1 Rewind the incomming message tape as follows:

1. Position the large control knob to the PLAYBACK position.

2. Depress the REWIND button (If the ON button is depressed, it will be necessary to first depress OFF).

3. When the rewind is complete, depress OFF.

4. Press the TAPE COUNTER RESET button to reset the counter.

3.2.2 Position the large control knob to the AUTO-ANSWER position.

3.2.3 The answering machine will now answer all incoming calls, provide the outgoing announcement, record the caller's acknowledgement, and rewind the outgoing message tape.

3.3 Replaying the Incoming Message Tape

After a sufficient period of time has passed to allow personnel to call in, replay the acknowledge messages as follows:

3.3.1 Observe the RECEIVED-IN USE pilot lamp. If the lamp is flashing, calls have come in and have been answered. If the lamp is lit, the machine is responding to a call. Wait for the lamp to go off.

3.3.2 Position the large control knob to the PLAY BACK position. When this is done, the incoming tape will automatically rewind.

3.3.3 When the tape is rewound, depress the ON button to start playback. Adjust MONITOR VOLUME as desired.

3.3.4 Depress OFF to stop olayback. Use REWIND and/or FF (fast forward as desired).

3.4 When the machine is no longer in use, rewind the incoming message tape, insert the standby outgoing message tape, and set up the machine to answer incoming messages as described in steps 3.1 and 3.2

3.5 Recording an Outgoing Announcement

Note: There will usually be pre-recorded messages available for each classification of emergency. If one of these tapes fails or is missing, record an outgoing announcement as follows:

3.5.1 Insert a blank, standard cassette tape into the rear player as described in step 3.1.

3.5.2 Position the large control knob to the ANNOUNCEMENT position.

3.5.3 Depress the ON button.

3.5.4 Depress the ANNOUNCEMENT REC button and keep it depressed until the RECEIVED-IN USE lamp lights and keep the button depressed.

3.5.5 Record the announcement slowly and clearly. Speak into the microphone at a distance of about 4 to 6 inches, using a normal speaking voice. Use the applicable format from Appendix 1 to this attachment.

3.5.6 When complete, release the ANNOUNCEMENT REC button. Releasing the button records the end of message tone, thus, once the button is released, the message cannot be added to.

3.5.7 Review the recorded announcement as described in step 3.1.

3.5.8 If the message requires correction, repeat steps 3.1.1 through 3.1.6.

4. <u>Performing Weekly Beeper Checks</u>

This procedure shall be performed every Monday at 9 PM.

4.1 Using the procedures above, check that "standby/no-action" tape is in the outgoing tape player.

4.2 Using the auto-dialer, call out both the Beaver County and Pittsburgh beeper sounds. It is not necessary to call-in. If the beeper did not sound, note your location and bring the malfunction to the attention of the Emergency Planning Supervisor.

SAMPLE MESSAGES

Normal Operations

"You have reached the Beaver Valley Power Station. This line is not inuse at this time. Please check your directory for the proper telephone number."

Unusual Events (Beepers not sounded)

"This is the Beaver Valley Power Station. There has been an Unusual Event emergency. There is no personnel call-out at this time."

Alert Emergency--Non-radiological

"This is the Beaver Valley Power Station. There has been an Alert Emergency. All Technical Support Center personnel shall report to their assigned emergency locations. Radcon technicians are not needed at this time. At the tone, acknowledge this message by giving your full name, and estimated time of arrival."

Alert Emergency--Radiological

"This is the Beaver Valley Power Station. There has been an Alert Emergency. All Technical Support Center Personnel shall report to their assigned emergency locations. Radcon technicians shall be called out. At this tone, acknowledge this message by giving your full name, and estimated time of arrival."

Site Area Emergency

"This is the Beaver Valley Power Station. There has been a Site Area Emergency. All Technical Support Center and Emergency Operations Facility personnel including radcon technicians, shall report to their assigned emergency locations. At the tone, acknowledge this message by giving your full name, and estimated time of arrival."

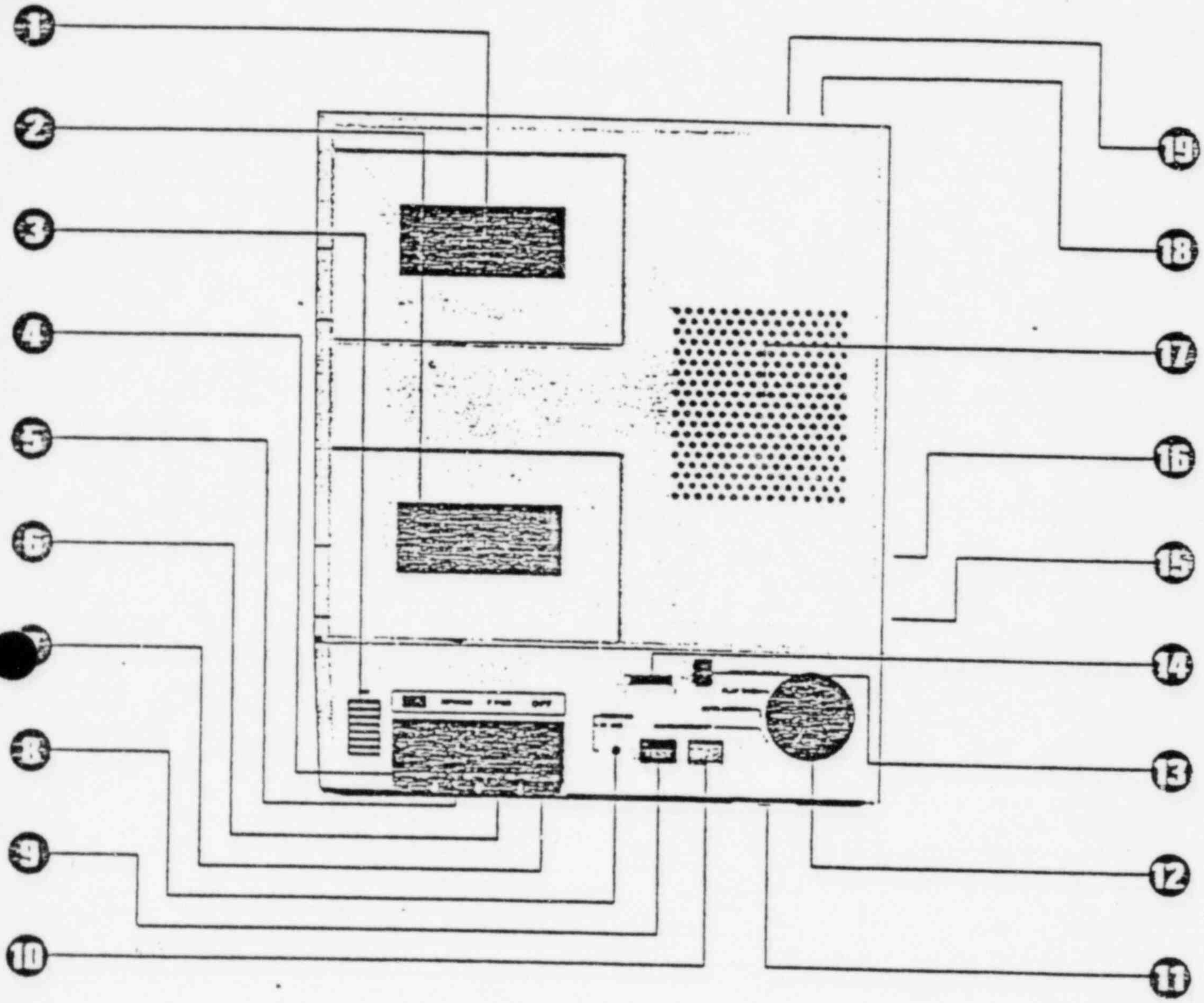
General Emergency

"This is the Beaver Valley Power Station. There has been a General Emergency. All Technical Support Center and Emergency Operations Facility personnel including radcon technicians shall report to their assigned emergency locations. At the tone, acknowledge this message by giving your full name, and estimated time of arrival."

NOTE

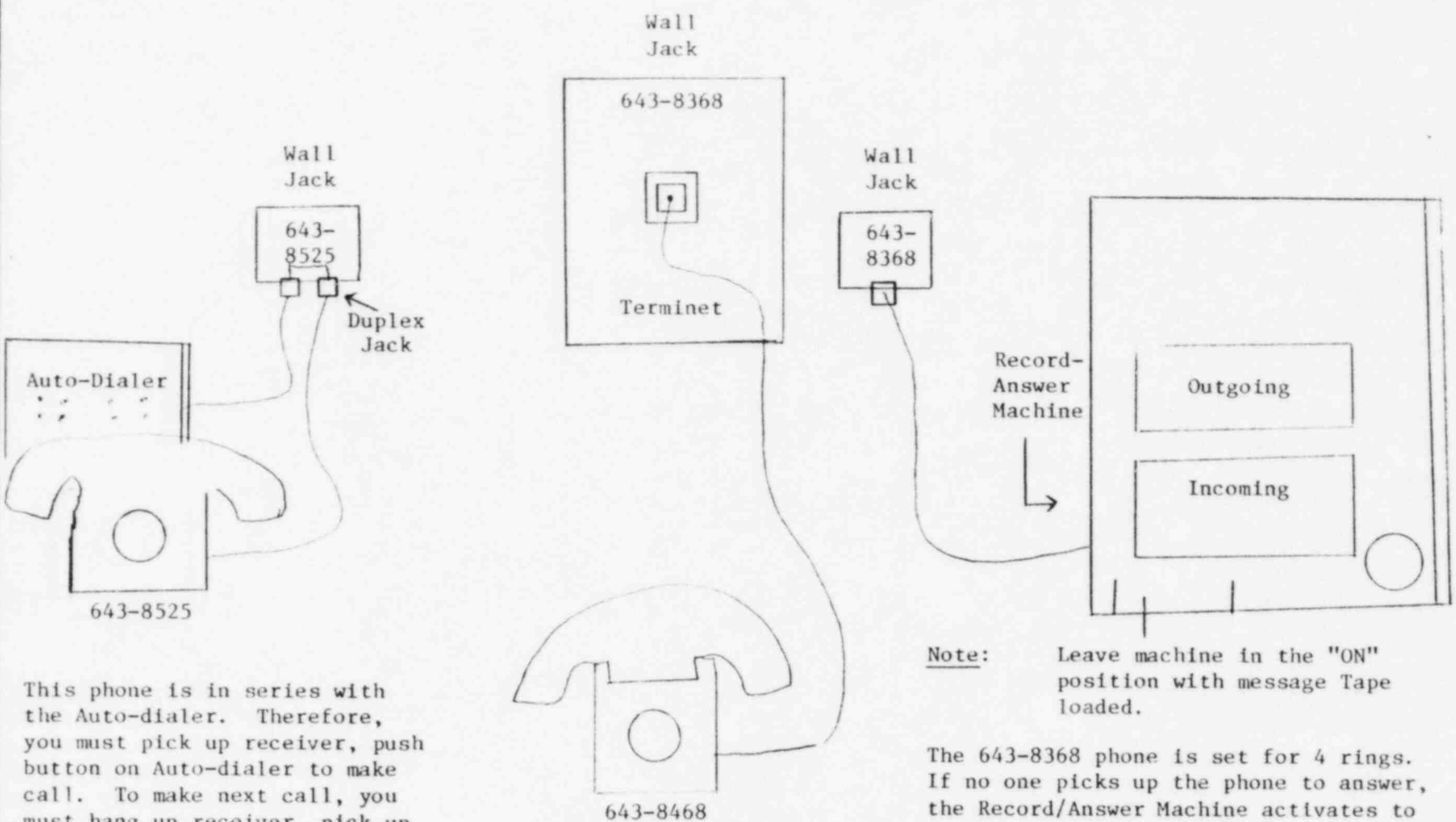
FOR ALL EXERCISES/DRILLS, THE RECORDED MESSAGE SHALL BE PREFACED AND ENDED WITH THE PHRASE "This is a drill".

Telephone Answering system Features:



1. Outgoing Message Cassette Compartment
2. Incoming Message Cassette Compartment
3. Built-in Microphone
4. ON Button
5. Rewind Button (REWIND)
6. Fast Forward Button (FFWD)
7. OFF Button
8. IN USE and RECEIVED Lamp
9. Test Button
10. Record Button
11. Volume Control
12. Selector Dial
13. Counter Reset Button
14. Tape Counter
15. Voice Control Switch
16. Ring Delay Switch (#1)
17. Speaker
18. Power Jack
19. A, A1 Switch ← (unlimited)

COMPUTER ROOM



This phone is in series with the Auto-dialer. Therefore, you must pick up receiver, push button on Auto-dialer to make call. To make next call, you must hang up receiver, pick up and when you get a dial tone, then push next button on Augo-dialer.

Computer Room
Terminet Phone
Used during normal daylite hours by computor room personnel.

Note: Leave machine in the "ON" position with message Tape loaded.

The 643-8368 phone is set for 4 rings. If no one picks up the phone to answer, the Record/Answer Machine activates to give message and record answer.

DISSEMINATION OF EMERGENCY DATA BETWEEN EMERGENCY RESPONSE CENTERS

A. OBJECTIVE

This procedure describes the general communications protocols to be used during emergency conditions to transfer data between the various elements of the Beaver Valley Power Station emergency organization and between the various emergency response facilities.

This procedure supplements the information and instructions contained in EPP/IP-1.2, "Communicat ons and Dissemination of Information" and in Chapter 40 of the Station Operating Manual, as it applies to internal communicaitons.

B. PREREQUISITIES/INITIAL CONDITIONS

1. An emergency condition has been declared at the Beaver VAlley Power Station as provided in the BVPS Emergency Preparedness Plan;

   and/or

2. The emergency organizations have been activated.

C. PRECAUTIONS

None

D. GUIDANCE AND CRITERIA

This procedure provides general information on how technical and operational data are transferred between various individuals in the emergency organization. This procedure is intended to serve as guidance and need not be followed step-by-step. The actual emergency conditions and/or contingencies that occur, such as failure of communications equipment, may make portions of this procedure inappropriate. TSC/EOF supervisory personnel should institute other appropriate measures or protocols aimed at the most effective and accurate exchange of information.

E. PROCEDURE

1. General Provisions

1.1 Each individual in the emergency organization must continuously evaluate the information that he becomes aware of and ensure that, when appropriate, this information is made available to others in the organization who may be able to use it.

1.2 Personnel transferring information must remain alert to the nature of the personnel who will be receiving the information, and ensure that the data is transferred in a terminology that is likely to be understood by the recipient. As an example, some personnel may understand what "FR-VS-112 reads 30,000..." means, but most will understand "the supplementary leak collection release flow rate is 30,000 cubic feet per minute..." much more readily. Extreme care must be exercised in this regard when communicating with offsite agencies.

Each communications should be prefaced with the title and name of both the initiator and the recipient.

1.3 The key supervisory personnel in the emergency organization, especially the Emergency Director and/or the Emergency/Recovery Manager, shall minimize their use of communications circuits, using junior personnel to perform most communications. Time spent on the phone is time spent away from managing the emergency response.

1.4 Communications personnel and other TSC/EOF personnel shall make every effort to serve as "buffers" to the Emergency Director or Emergency/Recovery Manager, in order to minimize the need for these individuals to personnally handle requests for information from individuals outside of the BVPS Emergency Organization. Written forms of communications such as data sheets or speed memo's should be used, when appropriate.

1.5 It is the policy of Duquesne Light to promptly provide appropriate and accurate information in response to reasonable requests from offsite agencies and individuals. However, channels for providing this information have been established and shall be followed to maximum extent possible.

1.5.1 Requests for information from members of the news media or from unidentified individuals shall be referred to Duquesne Light Public Information Department personnel at the Emergency News Center. This protocol has been established to ensure that all releases of information to the general public are accurate and have been coordinated with the public affairs personnel of the various offsite agencies.

1.5.2 Requests for information from offsite agencies via telephone shall normally be handled by communications personnel using the follow-up notification form. The follow-up notification form shall be prepared by the Communications and Records Coordiantor and approved by the Emergency Director.

1.5.3 Although all TSC/EOF personnel shall courteously and accurately respond to the inquiries of offsite agency personnel in the EOF, personnel shall avoid getting into long discussions which would detract from their primary responsibility. This is particularly the case when offsite personnel ask background or explanatory questions in order to understand the accident at hand. In these cases, the questions shall be referred to the Offsite Agency Liaison for answering. In order to avoid some of these questions the Offsite Agency Liaison should periodically brief these offsite personnel, explaining any data which may not be understood. For example, the Emergency Director may announce that the "VCT level is 23%..." The role of the Offsite Agency Liaison in this case would be to explain what the VCT is, its role in the accident, its role towards safety, and the significance of the reading.

2. Handling Incoming Information via Telephone or Radio

Information received at the TSC/EOF pertinent to the emergency response effort and for which no pre-designated data sheet exists, will be handled as follows:

2.1 The incoming information should be recorded on a carbon message form ("speed letter") by the individual receiving the data.

2.2 Each message shall be clearly identified by the name and the title of the initiator date, time and the message, and also the name and title of the recipient.

2.3 Copies of the message forms will be distributed as follows:

Top copy (original)	to the Emergency Director
2nd copy	to the Emergency/Recovery Manager
3rd copy	to the individual responsible for taking action on the data (eg: report on offsite dose shall be given to EA & DP)

2.4 When the Emergency Director and/or Emergency/Recovery Manager has read the form, the form shall be given to the status board keeper for transfer to the status board--if applicable.

2.5 When the data has been transferred, the status board keeper will retain the form for documentation.

3. Use of Communicator Circuits

The two Communicator circuits connecting the emergency response centers are used as follows:

3.1 The communicator circuits are intended to be used to transfer short, brief messages, primarily parameter data or instructions, between the various emergency response centers. There are two distinct circuits: (1) radiological assessment, and (2) operational control.

The TSC Coordiantor, OSC Coordintor, EA and DP Coordinator, Security Coordinator in the Guardhouse, and the Radcon Foreman in the ROC shall assign a communicator(s) to man the headset(s) in their Emergency Center.

An operations communicator is assigned to man the headset(s) in the Control Room.

3.1.1 The radiological assessment circuit is intended to provide a communications capability between the emergency facilities for the purpose of controlling the overall response of the emergency organization, to provide the various personnel a means of reporting data to the TSC/EOF, and to backup the CATV system for parameter data retrieval.

3.2 Longer duration conversations should generally not be conducted on the phone circuits. These conversations should be conducted on other communications circuits.

3.3 Communications on the phone circuits (Operations/Radcon) should take the following format:
(See Attachment 3):

- Message originator relays message verbally to his communicator,
- Communicator repeats message back to originator,
- Communicator relays message on circuit,

- addressee communicator repeats the message on the circuit to the sending phone talker.
- addressee communicator relays message to addressee,
- addressee acknowledges message.

3.4 When not directly involved with a message, communicator should remain alert to other communications on their circuit. If the information in a communication would be of interest to personnel in their area, the information should be repeated aloud, and if appropriate, recorded on the status board.

3.5 Generally, message forms ("speed letters") do not need to be used for communications on this circuit.

4. Use of TSC/Control Room Intercom Circuit

4.1 The TSC/Control Room intercom circuit is a dedicated, ring down intercom circuit connecting the control room and the TSC. The purpose of this circuit is to provide a reliable means of conducting longer term conversations between the control room personnel and TSC personnel. As such, this sytem supplements the CATV and phone talker systems.

4.2 There are six lines, two of which are pre-designated: (1) the Shift Technical Advisor phone, and (2) the Operations Coordinator phone. TSC personnel desiring to talk to one of these personnel should use the appropriate phone line. Calls to individuals other than the STA or Operations Coordinator should be made on other circuits.

5. Use of CATV System to Obtain Parameter Data

NOTE: Detailed instructions on the set-up and continued operation of the CATV system is provided in EPP/IP-1.4.1. This section addresses how the equipment will be used to obtain information.

5.1 Data sheets are provided in the TSC to facilitate data retrieval via the CATV system. These data sheets contain spaces to enter data on a standard parameter set. This parameter set was chosen to provide the primary indications necessary to support assessment activity. The parameter set has been divided into three groups--one for each of the camera control units.

5.2 Upon activation of the TSC, CATV Operator/Data Recorder in the TSC shall take a complete set of readings, recording the data on their individual data sheets.

5.3 When complete, the data sheets will be separated, and the copies distributed to the status board keepers in the TSC and EOF; Additional sheets will be sent to the TSC Coordinator, EA and DP Coordinator, PID, Assistant to the ED/ERM, and Westinghouse.

5.4 The status board keepers will enter the data on the status boards and retain the data sheets for record purposes.

5.5 The frequency of data taking will be determined by the Technical Support Coordinator to be consistent with the rate of change in plant parameters.

5.6 If a particular data item required trending, a camera will be trained on that indicator and recorded on the VCR.

5.7 If TSC personnel identify the need for data other than that included in the standard parameter set, CATV personnel should tray to obtain that reading via the CATV system. If a particular indication is not readily available on the system, the oepration's communicator in the Control Room should be used to obtain the necessary information.

5.8 Aids for locating the various instruments are attached to this procedure and are available in the TSC. Generally, it will be easier to locate a given instrument, if the camera is first zoomed out, then the indication positioned in the center of view using tilt and pan controls, and then zooming in on the indicaiton.

6. Use of the Status Boards

6.1 Status boards are provided in the TSC and EOF for tracking data and response actions. Status boards display the data such that it is available to all personnel in a given area. The boards also help to minimize forgetting an important parameter or action, and allow more persons to participate in the assessment process.

6.2 The status boards in the TSC and EOF consist of two types: (1) the plant system mimic diagram, which provides for the display of important plant parameters; and (2) the narrative board, which provides for sequential display of response actions taken or significant reports.

6.3 The status board keepers will keep the status boards current with data provided by personnel in their area. Prior to recording data on a status board, the status board keepers shall concur (via of Radcon/Operations circuits) with other status board keepers that the information is accurate and in agreement with other status boards.

7. Use of the Page-Party System

7.1 The Emergency Director and/or the Emergency/Recovery Manager should have periodic announcements made on the plant status over the page-party system to keep all site personnel appraised of the response effort.

7.2 The frequency and content of these announcements should be consistent with the rate of change in events and the significance of the data to the entire response organization. An announcement of no change in status is as important as a report of change in status.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures

2. Title 10 CFR 50

3. Beaver Valley Power Station Operating Manual Chapter 40

4. NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

G. ATTACHMENTS

1. CATV Data Sheets

2. BVPS-1 Control Room Instrument Arrangement

3. Emergency Headset Phone Circuits

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TECHNICAL SUPPORT CENTER

CAMERA: 1
2
3

STANDARD PARAMETER SET

Cont. Rad Level	______ RM-201	mr/hr
Cont. Rad Level	______ RM-202	mr/hr
Aux. Bldg Ventilation	______ RM-VS-101B	CPM
SLCS Ventilation	______ RM-VS-107B	CPM
Process Vent	______ RM-GW-108B	CPM

Met Data

*Wind Speed	______ 35'	______ 500'	mph
*Wind Direction	______ 35'	______ 500'	deg.
*Delta-T	______ 150-35'	______ 500-35'	^oF

*If terminet is operable, this data need not be taken.

DATE: __________ TIME: __________ Data Taker: ____________________

TECHNICAL SUPPORT CENTER

CAMERA: 4

STANDARD PARAMETER SET

Cont. Press (VB-A1)	________	PSIA (0-70; 7.5-12.5)		
Cont. Temp. (VB-A1)	________	^{o}F (0-300)		
Recirc Sump Level (VB-A1)	________	in. (0-90)		
Hydrogen (Local)	________	%		
*SI Accum. Lvl (VB-A1)	________ a	________ b	________ c	% (0-100)

*These parameters should be taken on the first round of readings and then at the request of TS Coordinator

DATE: ________ TIME: ________ Data Taker: ________________

TECHNICAL SUPPORT CENTER

CAMERA: 5

STANDARD PARAMETER SET

*Low Lvl Drn Tk Lvl (VB-A2)	______ LW-TK-3A	______ LW-TK-3B	in (0-145)
*Laund. Drn Tks Lvl (VB-A2)	______ LW-TK-6A	______ LW-TK-6B	in (0-48)
*HI Lvl Drn Tks Lvl (VB-A2)	______ LW-TK-2A	______ LW-TK-2B	in (0-120)
*Cool Rcvy Tk Lvl (VB-A3)	______ BR-TK-4A	______ BR-TK-4B	ft (0-30)

*These parameters should be taken on the first round of readings and then at the request of TS Coordinator

DATE: ________ TIME: ________ Data Taker: ________________

TECHNICAL SUPPORT CENTER

CAMERA: 6

STANDARD PARAMETER SET

Source Range Lvl (BB-B2)	______ 10^0 - 10^6 cps			
PZR Level (BB-B1)	______	% (0-100)		
PZR Temperature (BB-B1)	______	°F (150-600)		
RCS Pumps (BB-A6)	on/off a	on/off b	on/off c	
SG Pressure (VB-C2)	______ a	______ b	______ c	PSIG (0-1500)
SG Level (VB-C2)	______ a	______ b	______ c	% (0-100)
Steam Flow (VB-C2)	______ a	______ b	______ c	PPH (0-4 x 10
RCS Pressure (VB-A4)	______	PSIG (0-3000; 0-600)		
RCS Hot leg Temp (VB-A4)	______ a red	______ b grn	______ c blue	°F (0-700)
RCS Cold Leg Temp (VB-A4)	______ a red	______ b grn	______ c blue	°F (0-700)
RCS FLOW (VB-A4)	______ a	______ b	______ c	% (0-120)
Main Feedwater (VB-C2)	flow/no flow a	flow/no flow b	flow/no flow c	
Aux Feedwater (VB-C2)	flow/no flow a	flow/no flow b	flow/no flow c	
*PZR Relief Tk Lvl (VB-B1)	______	% (0-100)		
*PriWatStorTk Lvl (VB-C1)	______ BR-TK-6A	______ BR-TK-6B	ft (0-25	
*RWST Lvl (VB-C1)	______ QS-TK-1	ft		
*TPDWST (VB-C1)	______ WT-TK-11	______ WT-TK-10)	ft (0-39; 0-30)%	
*VCT Level (VB-A4)	______	% (0-100)		
*Pri Drns Xfer Tks (VB-A4)	______ DA-TK-1	______ DA-TK-2	in (0-48)	

*These parameters should be taken on the first round of readings and then at the request of TS Coordinator

DATE: ________ TIME: ________ Data Taker: ______________

TECHNICAL SUPPORT CENTER

CAMERA: **7**

STANDARD PARAMETER SET

MSIV Position (BB-C1)	open/shut a	open/shut b	open/shut c	
Electr. Dist. (BB-C4)	yes/no 345 kv	yes/no 138 kv		
Diesel Gen. (BB-C4)	yes/no DG 1	yes/no DG 2		
Battery (VB-C4)	______ 1	______ 2	______ 3	Volts (0-150)
Battery (VB-C4)	______ 4	______ 5	Volts (0-150)	

DATE: __________ TIME: __________ Data Taker: ____________________

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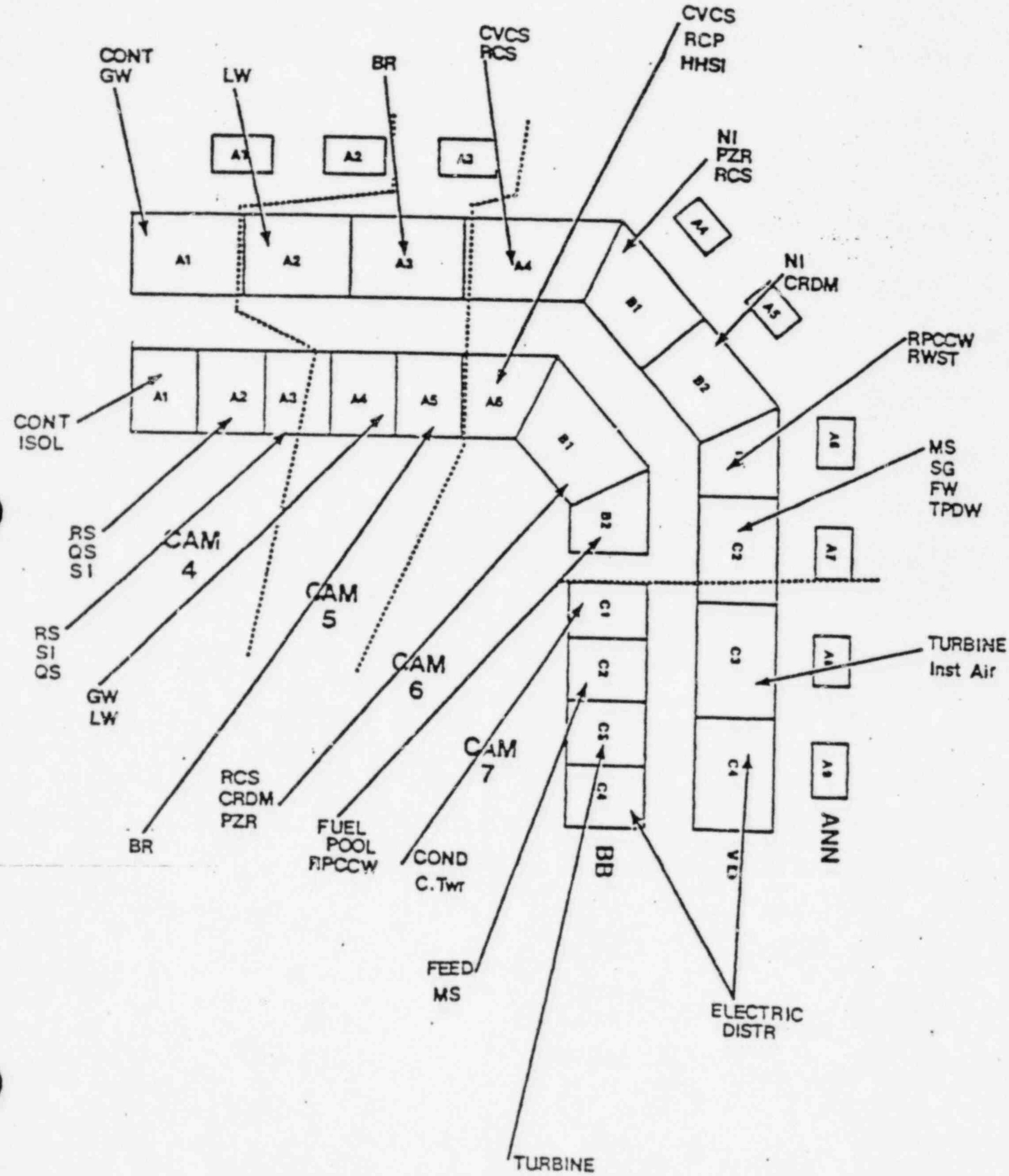
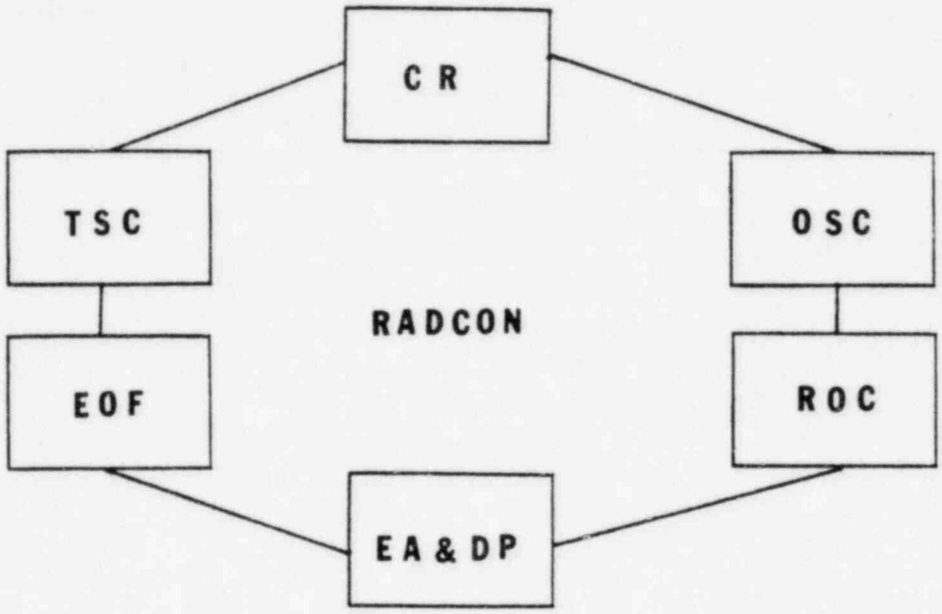
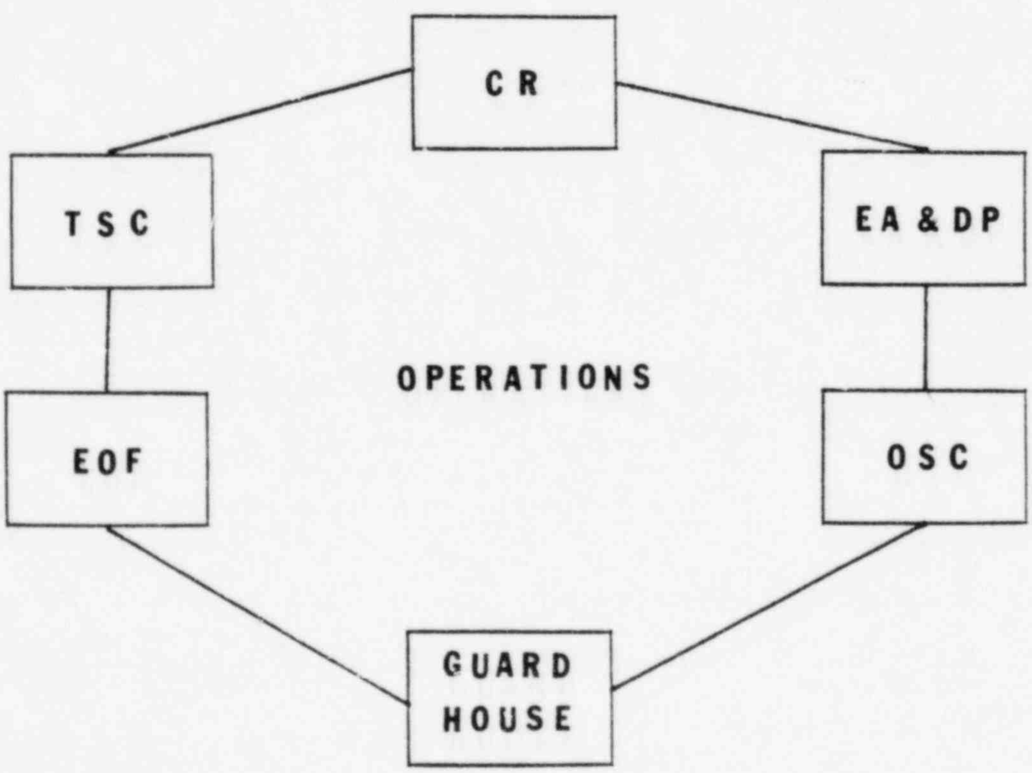

CVCS
RCP
HHSI
CVCS
RCS
CONT
GW
LW
BR
NI
PZR
RCS
A1
A2
A3
A4
A5
A6
A7
A8
A9
B1
B2
C1
C2
C3
C4
NI
CRDM
RPCCW
RWST
CONT
ISOL
MS
SG
FW
TPDW
RS
QS
SI
CAM
4
RS
SI
QS
CAM
5
CAM
6
TURBINE
Inst Air
GW
LW
CAM
7
RCS
CRDM
PZR
BR
FUEL
POOL
RPCCW
COND
C.Twr
BB
VB
ANN
FEED
MS
ELECTRIC
DISTR
TURBINE

EMERGENCY HEADSET PHONE CIRCUITS

EPP/IP 1.2.1
Attachment 3





IP-1.2.2 Emergency Paging Devices/Beepers

A. Purpose

This Procedure provides instructions for the use of the Radio Paging (Beeper) device used to notify key personnel in the event of an emergency.

B. Procedure

1. Issuance of Paging Devices

1.1 Paging devices will be issued by the Nuclear Safety and Licensing Department to key personnel as outlined below.

° Designated primary individuals in each emergency organization position.

° All of the designated alternates to Emergency Director and Emergency/Recovery Manager.

° Selected alternates to other positions as needed.

° Others as agreed upon by the Manager, Nuclear Safety and Licensing and the other Department Managers.

1.2 Individuals assigned a paging device are required to carry and respond to an emergency call but are not restricted in their off-hours activities.

2. Response (Actual Emergency)

2.1 Upon receipt of a pager signal, personnel shall perform the following actions:

2.1.1 Call in on the designated phone line for receipt of the emergency message and to acknowledge receiving notificaiton; giving your name, acknowledgment, and estimated time of arrival.

2.1.2 Proceed promptly and safely to their assigned emergency location.

3. Temporary Transfer

3.1 Individuals who will be out of the coverage area of the paging system for an extended period of time shall transfer the paging device to a qualified alternate. Alternates shall be selected sufficiently in advance of the transfer to allow for processing of the information.

° Primary holder's name and department.

° Designated alternate and home phone number.

° Time period transfer will be in effect.

3.2 This information will be recorded on the Radio Paging Transfer Log by the Emergency Planning Supervisor.

3.3 The primary holder of the paging device will inform the Emergency Planning Supervisor when the paging device is returned to his possession. The Emergency Planning Supervisor will then enter this information on the Radio Paging Transfer Log (Attachment 1).

4. Testing and Maintenance

4.1 The paging and answering systems shall be tested weekly on Monday evenings at approximately 9 p.m. All personnel assigned "beepers" are to check that their "beepers" function properly. Should the signal not be received and the holder is within range of the test signal, the problem should be brought to the attention of the Emergency Planning Supervisor.

4.2 Personnel assigned a paging device are responsible for proper care and use of the device as outlined in instructions provided with the device. Replacement batteries are available from the Nuclear Division Control Office. Personnel should have a spare battery available at all times.

C. References

1. Nuclear Division Directive No. 18.

Mon[illegible] ______________

RADIO PAGER [illegible]ANSFER LOG

Primary	Alternate	Phone	Date		Returned (✓)	Emergency Planning Supervisor
			From	To		

Duquesne Light

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TURNOVER STATUS CHECKLIST

A. OBJECTIVE

This procedure is a turnover status checklist to be used by the Emergency Director/Emergency Recovery Manager prior to assuming the responsibility of the Emergency.

B. PREREQUISITES

1. The designated Emergency Director shall relieve the Nuclear Shift Supervisor after being notified of an Unusual Event or an Alert.

2. The designated Emergency Recovery Manager shall relieve the Emergency Director after being notified of a Site or General Emergency.

C. PRECAUTIONS

1. The turnover status checklist provides only general type emergency information. The Shift Supervisor/Emergency Director should provide any other important specific information necessary to ensure a complete turnover of information.

D. GUIDANCE AND CRITERIA

1. Upon notification of an Unusual Event or Alert emergency, the Emergency Director shall proceed to the Control Room, when appropriate, and complete the turnover status checklist from the on-duty NSS.

2. Upon notification of a Site or General Emergency, the Emergency Recovery Manager shall proceed to the TSC/EOF, when appropriate, and complete the turnover status checklist from the Emergency Director.

E. PROCEDURE

1. Complete sections that are applicable to the emergency.

1. EPP Status - (Classification)

_____ Unusual Event
_____ Alert
_____ Site Area Emergency
_____ General Emergency

_____ Time Check _____ Watch Reset

2. Have notifications been given? ____________________ when? ____________________

_____ DLC Personnel _____ NRC
_____ Offsite Areas

3. General Chronology of events

TIME	EVENT
TSC	ACTIVATED
EOF	ACTIVATED

4. Protective Actions

Unit evacuation	___yes	___no	When ____________________
Site evacuation	___yes	___no	When ____________________
Offsite evacuation	___yes	___no	When ____________________
Sheltering	___yes	___no	When ____________________
Accountability	___yes	___no	When ____________________
Site closed to Visitors	___yes	___no	When ____________________

5. Plant radiation status (Chronology)

TIME	EVENT
____________	____________
____________	____________
____________	____________
____________	____________
____________	____________

6. Latest unit survey results: Time __________ Status __________

____

____

____

7. Latest site survey results: Time __________ Status __________

____

____

____

8. Latest off-site radiation survey results:

TIME	LOCATION	RESULTS
________	____________	____________
________	____________	____________
________	____________	____________
________	____________	____________
________	____________	____________
________	____________	____________
________	____________	____________

9. Dose Projection Information:

Time	Results
______	______________________________
______	______________________________
______	______________________________
______	______________________________
______	______________________________
______	______________________________

10. Status of Off-Site Notificaiton (Copy)

Agency	Time	Individual Contacted	Comments
BCEMA	______	______________	______________
PEMA	______	______________	______________
CCDSA	______	______________	______________
HCOES	______	______________	______________

11. Plant Status:

____Accident/Emergency ______Damaged System

ESF System Availablility

____

____

Ventillation System ______________________________

____

____

System/Rad Monitor Unavailability ______________________

____

____

12. Injured or contaminated personnel

Name	Employer	Status: ___Ambulance ___Hospital

13. Accountability:

Accountability taken ______________ (Time)

Results:

____ BV1 ____ BV2

____ SAPS

Assembly Areas Occupied Status ______________________________

____

14. Call out status:

Operations ______________________________

Radcon ______________________________

Maintenance

Mech. ______________________________

Elect. ______________________________

I & C. ______________________________

Test Crew ______________________________

Chemistry ______________________________

Emergency Organ. ______________________________

TSC ______________________________

EOF ______________________________

15. Emergency News Center, activated: ________________ In Charge: ________________

16. Potential for plant degradation:

____
____
____
____
____
____
____
____
____

17. Potential for Off-Site release of radioactivity:

____Airborne ____Water

____
____
____
____
____
____
____
____
____
____
____

18. Planned Activities (Next 6 hrs.):

Six to Twelve Hrs.:

Duquesne Light

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TECHNICAL SUPPORT CENTER ORGANIZATION AND OPERATION

A. OBJECTIVE

This procedure provides interim instructions for the organization, activation, and operation of the Technical Support Center (TSC). This interim procedure implements the provisions of the BVPS Emergency Preparedness Plan in the existing station facilities until such time as the permanent ERF is constructed.

B. PREREQUISITES/INITIAL CONDITIONS

An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.

C. PRECAUTIONS

1. The Shift Supervisor must ensure that TSC activities and personnel associated with these activities do not interfer with the operational activities in the Control Room associated with returning the plant to a safe configuration.
2. To ensure that appropriate and timely attention is paid to the in-plant and offsite aspects of the emergency condition, the Shift Supervisor (until relieved by a designated Emergency Director) should delegate supervision of in-plant activities to the Shift Foreman and assume the responsibilities of the Emergency Director as set forth in the BVPS Emergency Preparedness Plan.

D. GUIDANCE AND CRITERIA

1. Technical Support Center Function

1.1 The Technical Support Center (TSC) provides both plant management control and technical assistance to support Control Room personnel in the plant response to the emergency.

1.2 The functions of the TSC are initially performed in the Control Room and transfered to the TSC upon activation.

2. Technical Support Center Operability Criteria

2.1 The Emergency Director shall declare the technical support center (TSC) activated when in his judgement, the number of personnel and equipment available are adequate to perform the assigned functions of the TSC. As guidance the listing below suggests the minimum levels required. However, depending on the emergency conditions, more or less personnel may be required. The Emergency Director shall take whatever appropriate action necessary, consistant with establishing effective control and direction while mininimizing Control Room congestion and interference.

2.1.1 Personnel (min.):

- o Emergency Director
- o Technical Support Coordinator
- o EA & DP Coordinator
- o Communications Personnel (min. 2)
- o CATV/Status Board Records Personnel (Min. 2)

2.1.2 Equipment Operable (min.):

- o Audio Communications (Head set circuit and/or direct-dial phone lines) to Control Room.
- o NRC Phone (ENS - Red Hotline) or Bell Line.
- o PAX & Bell Phone lines.
- o Radio Communications link (Dose Assessment Monitoring)
- o Cameras and Monitors (#4, #5, #6, #7)

3.0 The Technical Support Center Activation

3.1 The Technical Support Center Coordiantor shall inform the Emergency Director that the Technical Support Center is ready for activation when the following have occurred:

- o Sufficient TSC staff members are present, depending on the actual emergency, as identified on Section 2.

o Sufficient communications equipment are operative for TSC personnel to perform assigned functions identified in Section 2.

NOTE

Refer to EPP/IP 1.2, "Communications and Dissemination of Information", and EPP/IP 1.4.1, "Operation of TSC Equipment".

NOTE

Depending on type of Emergency or Circumstances, the Technical Support Center may be activated without complete staffing or all available communications equipment.

3.2 The Emergency Director shall declare the Technical Support Center Activated and inform the Shift Supervisor of the transfer of responsibilities. EPP/IP 1.3 - Emergency Director/Emergency Recovery Manager turnover checklist - shall be used to assure a complete turnover of information.

3.3 The Emergency Director shall direct the Shift Supervisor to announce over the plant page party system that the Technical Support Center has been activated.

4. Technical Support Center Location

4.1 The Technical Support Center is located in the BVPS Administration Building (See Attachment 1). These facilities are provided with equipment and materials required for implementation of the BVPS EPP. Closed Circuit TV equipment and intercom telephones provide for TSC access to Control Room data and for conversations with operation personnel.

4.2 If access to the TSC is restricted due to radiological or other conditions, the TSC/ECC function will be relocated to the DLC T & D South Heights district office until such time as access is restored. This facility is provided with emergency equipment and materials to support the initial response.

The Emergency Director and the Emergency Coordinators shall report to the Control Room. All others shall report to the South Heights Office.

4.3 Re-assigment of locations may be required to meet contingencies such as data equipment on communications systems failures, or inhabitability of the assigned work area.

5. TSC Organizational Responsibilities

5.1 The functional responsibilities of the individual TSC personnel (emergency coordinators) are identified in Section 5 of the BVPS Emergency Preparedness Plan and in various EPP Emergency Implementing Procedures, and are summarized in sections E.2 through to E.11 of this EPP/IP.

6. Emergency Coordinator Rotation

6.1 In the event the emergency condition is adjusted to be a long-term emergency due to the nature and extent of the emergency conditions, the Support Services Manager, with the assistance of the Emergency Director, shall establish a watch rotation schedule for TSC personnel. This watch rotation schedule should be implemented as directed by the Emergency Director, and as soon as plant conditions have stabilized sufficiently to make safe watch reliefs possible.

7. Interface with Other Emergency Organizations

7.1 Immediate response, assessment, and the implementation of protective (onsite) and corrective actions pertaining to an emergency condition at the Beaver Valley Power Station is the responsibility of the BVPS Emergency Director. He shall have the authority to act on the behalf of Duquesne Light Company in all matters concerning an emergency, at least until such time as the scope, severity, and potential radiological consequences have been assessed, and the appropriate corrective actions and onsite protective actions have been implemented, or until relieved of this responsibility by higher DLC management. For Site Area or General Emergencies, the overall responsibility and authority for the DLC emergency response shifts to the Emergency/Recovery Manager. Following the critical period, but still with complete regard for health and safety, major decisons and corporate commitments are the responsibility of DLC management. Although in an emergency condition, the BVPS Emergency Director may seek and act upon the advice of others outside of Duquesne Light Company (such as State and Federal regulatory agencies, and/or industry advisory groups) the responsibility and authority for response remains as established above.

7.2 When the Emergency Opertaions Facility (EOF) is activated, the Emergency/Recovery Manager assumes responsibility and authority for the over all DLC emergency response, with particular emphasis on offsite DLC activities. At this time, the Emergency Director and the TSC staff will concern themselves with only the onsite aspects of the emergency response.

NOTE

An announcement over the Plant Page Party System will be made to inform personnel that the EOF is activated.

7.3 The BVPS Emergency Director shall maintain communications with the operating or emergency organization at the Shippingport Atomic Power Station in the event of an emergency at BVPS or at SAPS. Section 5.4.1 of the BVPS Emergency Preparedness Plan describes the interface between the BVPS and SAPS emergency organizations.

7.4 The BVPS Emergency Director shall ensure that the primary emergency response agencies of the jurisdictions within the emergency planning zone (identified on the Emergency Notification Call-list) are fully apprised of the situation at the facility and the possible offsite consequences, if any. The responsibilities of offsite organizations with regard to an emergency at BVPS are identified in the BVPS EPP. In summary, offsite emergency response groups have responsibility for all offsite actions for the protection of the general public, following notificaiton by BVPS that an emergency exists.

E. PROCEDURE

1. Emergency Director

Upon occurrence of an off-normal or emergency condition at the facility, the on-duty Shift Supervisor shall proceed as follows:

NOTE

This procedure is primarily related to activation of the emergency organization. The Shift Supervisor shall implement appropriate corrective actions to contend with the situation and to mitigate possible deterioration in plant conditions in accordance with the BVPS Operating Manual while simultaneously implementing this procedure and other appropriate Emergency Implementing Procedures.

1.1 Immediately upon notification of an existing or potential emergency assume the role of Emergency Director. Maintain this position until relieved by a designated Emergency Director, or until the emergency condition is terminated (short-term emergencies--less than about one-hour). Refer to the TSC Call-list (attached to the Monthly Phone List) to identify designated individuals.

1.2 Perform appropriate assessment and corrective actions and classify the emergency as provided in EPP/I-1 "Recognition and Classification of Emergencies".

1.3 Implement additional emergency measures in accordance with the appropriate EPP/Instruction.

1.4 For emergency conditions within the Unusual Event Classificaiton, evaluate the severity and nature of the emergency condition and the necessity for augmentation of the on-duty operating organization. If additional personnel are required, call-out appropriate designated TSC personnel, and others as needed.

1.5 For emergency conditions with the Alert, Site Area Emergency, and General Emergency classificaitons, activate the entire TSC by calling-out designated personnel to fill all emergency coordinator positions.

NOTE

When calling out personnel, ensure the individuals notified understand the location to which they are to report. This is necessary since some personnel may be designated as alternates to an emergency coordinator position in addition to a primary assignment elsewhere (TSC/EOF/ENC).

1.6 Until called-out personnel arrive, appoint qualified emergency coordinators from the on-duty shift or from other available personnel, as appropriate, for assistance with current and continuing emergency control but assume those responsibilities until the positions are filled.

1.7 Initially contend with the emergency from the Control Room.

1.8 If evacuation of the Control Room becomes necessary, or if off-duty personnel cannot approach the site due to onsite and/or offsite radiation levels (or other impediments), activate the alternate EOF in South Heights. In this case, direct called-out personnel to report to that location during notification.

1.9 Continue operation of the TSC until such time as the emergency is terminated, and normal operations are restored or a recovery organization is established.

1.10 Upon classification of the abnormal condition as an Alert Emergency, notify the designated Emergency/Recovery Manager and place him on standby

1.11 Upon classification of the abnormal condition as a Site Area or General Emergency, notify the designated Emergency/Recovery Manager to activate the Emergency Operation Facility. Refer to EPP/IP-1.6.

1.12 A chronological log of emergency measures and communications shall be maintained by the Communications and Record Coordinator. All documents related to the emergency response, such as dose projection calculations, survey results, etc, shall be maintained for subsequent review and evaluation.

1.13 Emergency coordinators shall perform tasks related to their functional responsibilities assigned in the BVPS Emergency Preparedness Plan, or as directed by the Emergency Director. Each emergency coordinator shall apprise the Emergency Director of any significant changes in the status of his individual area of responsibility, and shall seek the advice of the Emergency Director in any major decision related to this area of responsibility.

1.14 The Operations Support Center or one of the assembly areas may be a resource of additional personnel to staff TSC positions, and/or perform other emergency response functions. On-duty personnel not actively involved with the accident recovery will assemble at the primary assembly area, if when accountability is ordered. When accountability is complete, selected personnel from assembly area will be assigned to the OSC.

NOTE

The following sections summarize the designated functions of the various emergency coordinators assigned to the TSC. These listings are not intended to serve as a step-by-step procedure, not are they inclusive of all activities which fall within the purview of the designated position.

2. Assistant to the Emergency Director

2.1 Review BVPS EPP and EPP/IPs applicable to the particular emergency condition and advise/prompt the Emergency Director in procedural requirements.

2.2 Assist the Emergency Director in performing administrative tasks to free the Emergency Director for decision making.

2.3 Assist other Emergency Coordinators with their assigned functions, provided such assistance does not conflict with paragraphs 2.1 and 2.2 of this EPP/IP.

2.4 Perform other tasks as assigned by the Emergency Director.

2.5 Upon declaration of a Site Area or General Emergency, proceed to the Emergency Operations Facility to serve as Assistant to the Emergency/ Recovery Manager.

2. Operations Coordinator

NOTE

The Operations Coordinator is assigned to the Control Room and will remain there through the emergency.

3.1 Serve as the laison between the Emergency Director and the Shift operating personnel.

3.2 Advise the Emergency Director on matters concerning plant operations.

3.3 Assume responsibility for routine administrative tasks normally performed by the NSS.

3.4 Assist in plant assessment and corrective actions by providing appropriate direction and support to the NSS and/or NSOF.

3.5 Apprise the Radiological Controls Coordinator of planned plant operations which will require additional radcon technician coverage or which will result in a significant deterioration in in-plant radiolgocial conditions.

3.6 Apprise the EA & DP Coordiantor of planned plant operations which will result in a significant change in plant effluent radiological level.

3.7 Remain alert to assessment activities performed by other Emergency Coordinators, such as the EA & DP Coordiantor, which could assist in the assessment of plant conditions. For example, high radioiodine levels in plant effluents or containment atmosphere would be indicative of significant core damage.

3.8 Perform other tasks as assigned by the Emergency Director.

4. Communications and Records Coordinator

4.1 Serve as liaison for emergency-related communications between the Emergency Director and offsite emergency groups.

4.1.1 Evaluate the need for additional personnel as required, and assign personnel for extra shifts, if necessary.

4.2 Maintain communications between the Emergency Director and Emergency Coordinators working at locations other than the TSC.

4.3 Screen all direct calls to the Emergency Director and either re-direct the call to the applicable Emergency Coordinator, to the Emergency Director, or to DLC Public Information Department, as appropriate.

4.4 When the EOF is activated, serve as the communications liaison for the EOF and offsite agencies as requested by the Emergency/Recovery Manager.

4.5 Ensure that all incoming and outgoing calls made by Communications personnel -- either by telephone or by radio -- are logged and that these logs are retained.

4.6 To the extent possible, maintain a narrative log of TSC activities.

4.6.1 Update organizational status boards of personnel arriving at TSC.

4.7 Supervise other designated communicators in their assigned tasks, ensuring that all communications are performed in accordance with BVPS OM Chapter 40 and EPP/IP-1.1 "Notificaitons" and EPP/IP-1.2 "Communications and Dissemination of Information.

4.8 Perform other tasks as assigned by the Emergency Director.

5. Radiological Control Coordinator

5.1 When notified of the emergency, the Radiological Control Coordinator shall notify one of the Radcon Foreman and request that he commence a call-out of radcon personnel. During backshifts, the call-out should be initiated by the Radiological Control Coordinator prior to departing his home. Once the call-out is complete, the foreman should report to the Radcon Operations Center.

5.2 Direct and coordinate all onsite radiation control activities, implementing appropriate radiological controls in response to observed radiological conditions or as directed by the Emergency Director.

5.3 Ensure that appropriate personnel dosimetry is in use and that personnel exposure files are updated on a timely basis. Advise the Emergency Director and appropriate work group supervision of potentially limiting personnel exposure trends.

5.4 Advise the Emergency Director on matters concerning in-plant radiation controls.

5.5 Interface onsite radiation controls with offsite radiation assessment activities via the EA & DP Coordiantor, providing radiation control personnel to man monitoring teams as requested and as available.

5.6 Apprise the Operations Coordinator and the EP & DP Coordinator of a significant radiological conditions within the plant which could be used in assessing plant conditions and/or radiological effluents. (e.g.: High airborne activity in the Turbine Building which could escape to the atmosphere unmonitored.

5.7 Provide monitoring personnel to support decontamination efforts.

5.8 Apprise the Emergency Director of shortfalls in available personnel or equipment and request appropriate augmentation from other resources identified in the BVPS EPP.

5.9 Perform other tasks as assigned by the Emergency Director.

6. <u>Environmental Assessment and Dose Projection Coordinator</u>

6.1 Direct and coordinate all offsite radiological assessment activities including dose projection, offsite monitoring, environmental monitoring, etc.

6.2 Evaluate field monitoring, environmental sample analysis data, and where appropriate, process stream sample analysis data to assess radiological impact of the emergency.

6.3 Based on assessment data recommend appropriate offsite protective actions to the Emergency Director for relay to offsite agencies.

6.4 Where possible, advise the Operations Coordinator and the Emergency Director on the scheduling of planned emergency releases to take advantage of favorable meteorological conditions.

6.5 Interface DLC offsite monitoring activities with that of the offsite agencies and serve as the sole technical contact for offsite agencies with regard to DLC radiological assessment activities.

6.6 Designate appropriate personnel to assist with the EA & DP functions.

6.7 When the EOF is activated, transfer EA & DP functions to the EOF.

6.8 Perform other tasks as assigned by the Emergency Director or the Emergency/Recovery Manager.

7. Technical Support Coordinator

7.1 When notified of the emergency, the Technical Support Coordinator shall notify a designated alternate to his position and request that the alternate call-out the designated TSC technical staff. During back shifts, the TSC Coordinator should initiate this call-out prior to departing his home.

7.2 When the TSC is activated, the Technical Support Coordinator will direct and coordinate the emergency activities of the technical and engineering personnel assigned to the TSC.

7.3 The TSC Coordinator will serve as the liaison between the Operations Coordinator and the DLC and vendor engineering/technical personnel.

7.4 When the EOF is activated, the TSC Coordintaor will serve as the liaison between onsite technical and engineering personnel and the operating personnel. The TSC Coordinator will interface with the Engineering Manager for engineering support beyond the capabilities of the onsite personnel.

7.5 The TSC Coordinator and the TSC personnel will evaluate and assess plant conditions and where appropriate, recommend revised operating procedures and the conceptual design of necessary plant modificaitons.

7.6 The TSC Coordinator will review all proposed modificaitons and revised operating procedures for safety concerns prior to installation or implementation. Where necessary, the TSC Coordinator will make appropriate recommendations to the Onsite Safety Committee regarding these changes.

7.7 Periodically monitor dose rates in the TSC using survey equipment stored in the TSC . Report results and/or request additional monitoring of the Radcon Operations Center if necessary.

7.8 Perform other tasks as assigned by the Emergency Director.

8. Chemistry Coordinator

8.1 Advise the Emergency Director or technical matters concerning chemistry. Provide chemistry analysis results to key Emergency Coordinators when requested.

8.2 Coordinate chemistry personnel for in-plant sampling and analysis with the Nuclear Shift Supervisor.

8.3 Provide chemistry personnel for analysis of onsite/offsite environmental samples.

9. Maintenance Coordinator

9.1 Direct and coordinate the activities of the Electrical, Mechancial and I & C maintenance personnel in support of assessment and corrective actions on plant systems and equipment.

9.2 Serve as the liaison between the Emergency Director and the normal maintenance organization.

9.3 Advise the Emergency Director on matters concerning the maintenance status of plant equipment.

9.4 Coordinate in-plant maintenance activities with the Radiological Controls Coordinator to provide for appropriate radcon coverage of work in radiation areas.

9.5 Perform other tasks as assigned by the Emergency Director.

10. Security Coordinator

10.1 Direct and coordinate the activities of the BVPS security force in maintaining and appropriate security posture at the station.

10.2 Ensure that the security measures are compatible with the need for rapid emergency access and minimizing the excess exposure of security personnel.

NOTE

Maintaining security is normally not sufficient justification for granting emergency exposure limits to security personnel. If radiological conditions impact the habitability of the security posts, the security perimeter should be expanded to where dose rates allow manning security posts.

10.3 Coordinate evacuation and accountability functions of the security response personnel as outlined in EPP/IP-3.2 "Personnel Accountability".

10.4 Expeditiously provide for Station access for emergency response personnel who do not have current security badging at the Beaver Valley Power Station.

10.5 Establish roadblocks on public raodways which cross the BVPS exclusion area as provided in EPP/IP-3.5. "Traffic and Access Control", until such time as they are relieved by state or local police personnel or dose rates decrease.

10.6 If an evacuation is called, perform traffic control and other activities as provided in EPP/IP-3.5, "Traffic and Access Control"; EPP/IP-3.1, "Evacuation"; and EPP/IP-3.2, "Personnel Accountability".

11. Operations Communicator

NOTE

The Operations Communicator is located in the Control Room to man the Radcon/Operations headset phones.

11.1 Provide accurate, verified information to other Emergency centers (TSC/EOF/CAS/EA & DP/OSC/ROC) via the Radcon/Operations circuits.

11.2 Provide the Nuclear Shift Supervisor with accurate, verified information from other Emergency Support Centers (TSC/EOF/EA & DP/OSC/ROC/CAS).

12. Functions Served in the EOF

12.1 During Unusual Event or Alert Emergencies, the Emergency Operations Facility will not normally be activated. The functions served by the Emergency Managers in the EOF are not expected to be necessary to the degree which requires designation of specific individuals to perform these functions. These functions are instead assigned to Emergency Coordinators in the TSC, or are available through normal administrative channels.

Unusual Events and Alert Emergencies	Site Area and General Emergencies
Emergency Director	Emergency/Recovery Manager
EA & DP Coordinator	EA & DP Coordinator
Director of Administrative Services*	Support Services Manager
Technical Support Coordinator	Engineering Manager
Communications & Records Coordinator	Office Agency Laison
PID Representative	Public Information Manager

*Normal Organization title.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures
2. Beaver Valley Power Station Operating Manual
3. Title 10 Code of Federal Regulations Park 50, Appendix E
4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.
5. NRC Inspection Report 50-334 #81-27 (The concept of operations described in this EPP/IP were incorporated in response to finding.)

G. ATTACHMENTS

1. TSC Location

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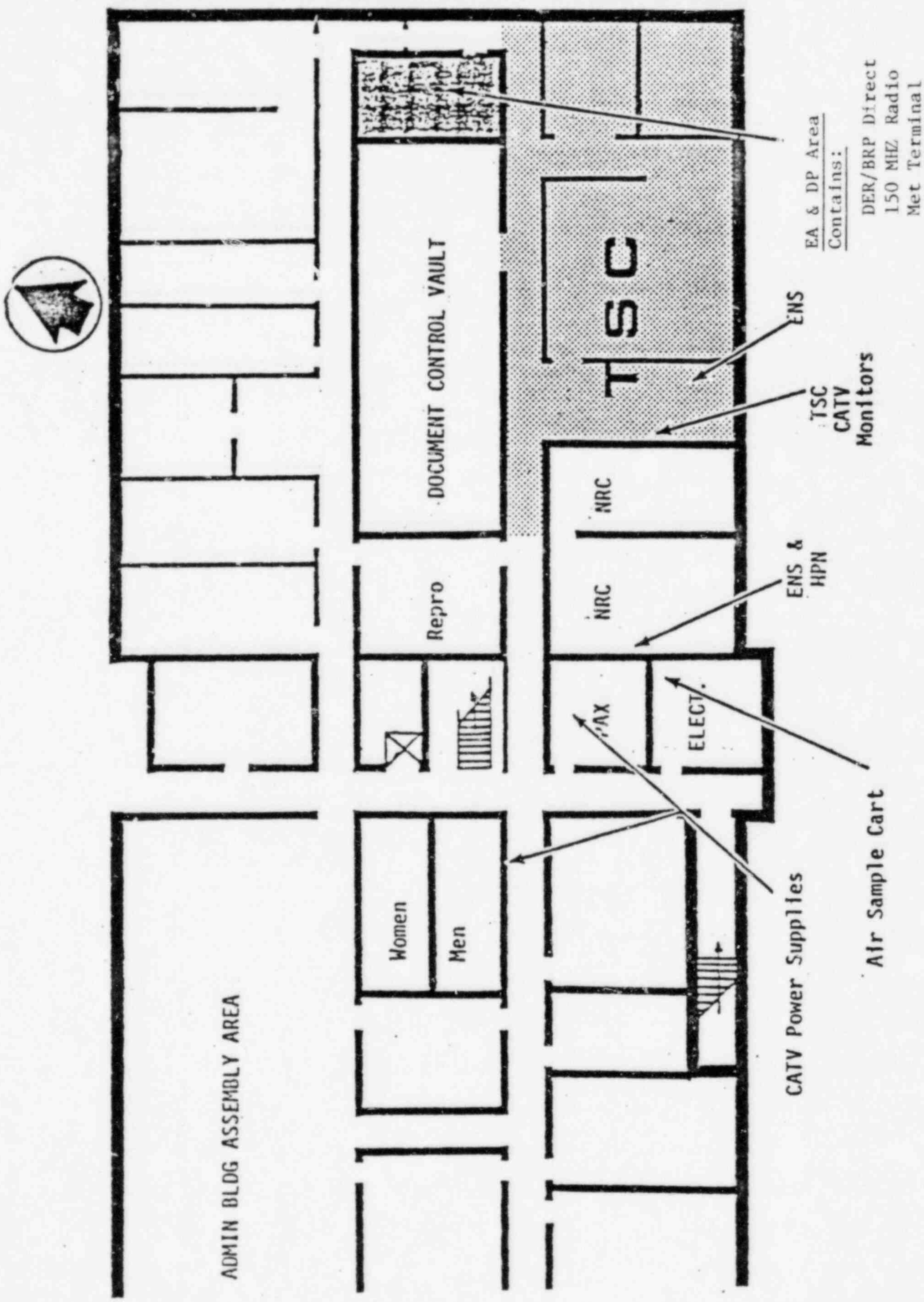

ADMINISTRATION BUILDING BASEMENT-----TECHNICAL SUPPORT CENTER

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OPERATION OF TECHNICAL SUPPORT CENTER EQUIPMENT

A. OBJECTIVE

This procedure describes the operation of the communicaiton equipment located in the Technical Support Center. The equipment addressed includes the CLosed circuit video equipment, the auto-ring direct telephone lines, and the FM radio system.

B. PREREQUISITES/INITIAL CONDITIONS

1. 120 VAC power must be available from the uninterupted power supply system (UPS) (inverter powered from DC batteries) in order to operate the majority of the equipment. Administration building distribution panel RP2 must be energized to operate the remaining equipment.
2. The equipment is tested and verified operable in accordance with BVT 1.1-1.60.2 "Interim Technical Support Center Control Monitoring Operability test".

C. PRECAUTIONS

1. When reading Control Room chart recorders with the closed circuit TV system, remain alert to chart interpretation error caused by parallax, or by scaling factors which may modify observed chart readings. On some chart recorders, the scaling factor may change with increasing response (range-switching). Where possible, chart recorder traces should be compared to other indications of the same parameter (eg: meters) to ensure proper interpretation.

D. GUIDANCE AND CRITERIA

1. Video Systems

1.1 There are four color video cameras and 3 black and white video cameras mounted in the Control Room ceiling. The cameras can be remotely panned, titled, zoomed, and focused from the TSC. In addition, the iris (lens opening) on the color cameras can be remotely operated. The field of vision of the color cameras include the benchboards and the vertical panels A, B, and C. Two black and white cameras are fixed in the direction of the radiation monitoring racks, and the third camera is fixed on the meteorology recorders. The rotation of the cameras (panning) is limited by stops.

1.2 The video signal from the cameras is transmitted to the TSC via fiber optic cables. Transmitters and receivers located at the ends of these optic cables convert the video signal into light pulses, and vice versa.

1.3 There are seven color monitors located in the TSC. One for each camera. A switch on each monitor (operable only on monitors 4, 5, and 6) allows the operator to chose to monitor either the incoming camera signal (LINE) or a signal from the videocassette recorders (VTR).

1.4 Three time-date generators provide on-screen indications of time and date on monitors 4, 5 and 6. Controls on the generator allow the operator to position and display where desired, to chose the size and format of the display, and to adjust the time and date. The generated time and date signal is recorded along with the incoming camera signal if the VTRs are in the record mode, providing for subsequent post-accident evaluation.

1.5 Three camera controls, labeled TX1, TX2, TX3 (transmitters) provide for remote control of all seven cameras from the TSC. TX1 operates cameras 1, 2, 3; TX2 operates cameras 4, 5, and 6. TX3 normally operates only camera 7, but can be selected to operate any of the seven cameras.

The transmitters provide for control of the assigned cameras, one at a time, Pan, tilt, zoom, and focus are cntrolable with the transmitters. In addition, the transmitter for cameras 4, 5, 6 and 7 provide for adjustment of the camera light level (iris).

1.6 Three videocassette recorders provide for recording the signal from cameras 4, 5, and 6. The other cameras cannot be recorded. The recorders are commercial standard 3/4" U-matic recorders. Each cassette provides for one hour of program. Microphones attached to the recorders provide for recording a running narrative. The recorders have a monitor feature by which the signal being recorded on the tape can be monitored. This corresponds to the VTR switch on the monitors.

2. Telephone Systems

2.1 Six telephone sets are provided in the TSC. The telephones are connected to three sets of two lines,providing for six simultaneous conversations. The system is an auto-ring system. There are two lines to each station:

Technical Support Center 1 (on three phones)
Technical Support Center 2 (on three phones)
Control Operator 1
Control Operator 2
Shift Supervisor 1 (has speaker phone)
Shift Supervisor 2
Computer Room 1 (has speaker phone)
Computer Room 2 (has extension cord to serve EA & DP Coordinator)

Buttons on each phone allow selection of one of hte three parties on that circuit. ("1" phones cannot talk to "2" phones, etc.). When the receiver is picked up, the phone associated with whatever button is depressed will ring automatically. This system is independent of the PAX system or the Bell system, and calls to stations other than those identified are not possible.

3. FM Radio System

3.1 The FM console allows communication with all DLC INdustrial Radio System (approximately 150 MHZ) radios. This includes communication with dispatched monitoring teams via high hand walkie-talkies, and the BVPS-1 and SAPS Control Rooms and ECCs. The radio has a private line feature, which provides a means of silencing communications not directed to the TSC (tone-operated squelch). With the PL feature on, the speaker on the console is squelched unless a station on PL1 transmits.. If the PL feature is off, the speaker will respond to all communications on the high band. Lifting the handset turns off the speaker and unsquelches the receiver, such that all does not provide for additional conversations--only one conversation can be held at one time--however, all parties on PL1 will hear the conversation. There is a separate repeater transmitter and antenna for this console. On transmit, the PL feature is always operable. As such, only receivers with PL1 or no PL feature can receive transmissions from the TSC.

4. Power Supplies and Switchgear Location

In the Administration Building:

4.1	TV Monitors #1, 2, 3	RP-2 PNL Elect. Closet 718' Circuit 46
4.2	TV Monitors #4, 5, 6, 7	TP-1 PNL PAX Room 718' Circuit 8
4.3	TX1, TX2	TP-1 PNL PAX Room 718' Circuit 9
4.4	TX3	TP-1 PNL PAX Room 718' Circuit 8
4.5	Fiber Optic Receiver Equipment	TP-1 PNL PAX Room 718' Circuit 10
4.6	Video Recorder #1 (Camera 4)	RP-2 PNL Elect Closet 718' Circuit 46
4.7	Video Recorder #2 (Camera 5)	RP-2 PNL Elect Closet 718' Circuit 45
4.8	Video Recorder #3 (Camera 6)	RP-2 PNL Elect Closet 718' Circuit 45
4.9	Time/Date Generators	RP-2 PNL Elect Closet 718' Circuit 46
4.10	Auto-Ring Telephones	TP-1 PNL PAX Room 718' Circuit 46
4.11	FM Radio Console/Repeater	RP-2 PNL Elect Closet 718' Circuit 45

In the Control Room Computer Room:

4.12	Video Cameras, Fiber Optics, Telephones	AC DIST PNL (Section #00) Circuit 11

E. PROCEDURE

1. System Start-Up

1.1 Set up auto ring telephone system as described below. If telephones are in place and connected, proceed to Step 1.2.

1.1.1 Obtain telephone sets from the storage cabinets located under the video monitors. The key to the cabinets is available in the General Office, or from security.

1.1.2 Locate the telephone sets on the TSC desk so that the numbered connector can be connected to the corresponding receptacle.

1.1.3 Connect the telephone sets to the phone receptacles located underneath the table. The connectors are keyed to properly align the connections. Match up each of the phone cords with the appropriately labeled connector. The connections are numbered from 21 to 27. With a small screwdriver, or other appropriate instrument, tighten the connector retaining screws.

1.2 Energize the telephone system by closing the circuit breaker for circuit 7 in the TP-1 distribution panel (located in the PAX Room 718').

1.3 Using the PAX or Bell systems, request that Control Room personnel remove the lens caps from all seven cameras and then, energize circuit 11 on the AC DIST PNL located on the rear of computer section 00.

NOTE

The lens caps for the video cameras should be removed prior to energizing the cameras to prevent damage. Circuit 11 powers both the telephones and the video cameras.

1.4 Energize video equipment supply circuits as follows:

1.4.1	TP-1 PNL PAX Room 718' Administration Building	Circuit 8 Circuit 9 Circuit 10
1.4.2	RP-2 PNL Electrical Closet 718' Administration Building	Circuit 45 Circuit 46

1.5 Energize the video equipment as follows:

1.5.1 TV Monitors

- ° Pull out front panel knob labeled PULL-ON-VOL
- ° Rotate volume control knob fully counterclockwise (there is no audio).
- ° Position knob labeled VTR-LINE to "LINE".

1.5.2 Video Tape Recorders

- ° Remove the cabinet doors and place them aside.
- ° Push the ON-OFF switch to "ON". Other controls will be set in section 5 of this EPP/IP.

1.5.3 Time Date/Generators

- ° Press the POWER switch to "ON" on all three units.

1.5.4 Camera Control Transmitters (TXs)

- ° The TX units energize when the respective distribution circuit is energized.

NOTE

The CAM PWR (camera power) control on the TX units is not operable. Camera power is controled by AC DIST PNL Circuit 11 and a manual power switch (normally on) located on the cameras.

° Position the two toggle switches on the Control Pair Transfer Panel (located next to TX3) to the up position (labeled "TX1", "TX2")

NOTE

With the toggles in the "TX1" TX2" positions, TX3 controls only camera 7. If the left hand toggle switch is positoned to the "TX3" position, control of cameras 1, 2, and 3 is transferred from TX1 to TX3. In a similar manner, if the right hand toggle switch is positioned to the "TX3" position, control of cameras 4, 5, and 6 is transferred from TX2 to TX3. If both toggles are positioned to "TX3", TX3 controls all seven cameras.

1.6 Energize the FM radio console by turning the power switch to "ON". The repeater cabinet is energized when circuit 45 on RP-2 is energized.

1.7 Position the "EPP" switch to the "EPP/Normal" position and connect phone sets to the extension jacks.

2. Operation of TV Monitors

2.1 Once energized, the TV monitors will display the video image from the associated camera if the VTR-LINE switch is in the "LINE" position. Monitor 1 displays Camera 1 image, Monitor 2 displays Camera 2 image, and so on.

2.2 Monitors 4, 5 and 6 can display the output signal of the associated VTR if the VTR-LINE switch is in the "VTR" position. This provides for monitoring during recording and viewing VTR playback. VTR-1 is connected to Monitor 4 and Camera 4. VTR 2 is connected to Monitor 5 and Camera 5. VTR 3 is connected to Monitor 6 and Camera 6.

2.3 Monitor controls for V-HOLD (vertical hold) (located under small panel under PULL-ON-VOL switch); and the BRIGHT (brightness), TINT, and COLOR controls operate in a manner identical to similar controls on a conventional television receiver. The COLOR-PILOT (located under the small panel) is an automatic circuit which, when activated, adjusts color, tint, brightness, and contrast. With the COLOR-PILOT activated, the

COLOR, TINT, BRIGHT, and PANABRITE controls will adjust within a narrow range, With the COLOR-PILOT de-activated, the controls operate in a wide-range mode. The PANABRITE control (located on the bottom edge of the front panel) is a picture control which simultaneously adjusts brightness, contrast, and color. The VOL (volume) control is operable only if an audio narration is recorded (dubbed) on the VTR with the hand-held microphone. There are no microphones in the Control Room.

3. Operation of Control Transmitters (TX units)

Refer to Attachment 1 of this EPP/IP for operational information on the TX units.

4. Operation of the Time/Date Generators

Refer to Attachment 2 of this EPP/IP for operational information on the time/date generators.

5. Operation of the Videotape Recorders

Refer to Attachment 3 of this EPP/IP for operational information on the videotape recorders.

6. Operation of the Auto-Ring Telephone System

6.1 To communicate with another station, proceed as follows:

6.1.1 Press the button labeled with the name of the station with which you desire to communicate.

6.1.2 Pick up the handset. The receiver at the other station will automatically ring until answered.

6.1.3 Proceed with the conversation.

6.2 To operate the speaker phones:

6.2.1 Press the ON button on the speaker control.

6.2.2 Press the AREA button on the speaker control.

6.2.3 Proceed with the conversation. The handset does not have to be lifted.

7. Operation of the FM Radio System

7.1 To communicate with the BVPS-1 Control Room, proceed as follows:

7.1.1 Position the PL switch to the "PL" position.

7.1.2 Remove the handset from the hook and depress the handset TRANSMIT button. Use the following call:

"KGG-872 Beaver Valley Control Room, this is ________________ Beaver Valley Technical Support Center, Over"

7.1.3 Release the TRANSMIT button and wait for station response. When the called station responds, depress the TRANSMIT button, provide the message, and release the TRANSMIT button.

7.1.4 Terminate the conversation with the following phrase:

"KGG-872 Beaver Valley Control Room, this is ________________ Beaver Valley Technical Support Center, out".

7.2 To communicate with other high hand stations, proceed as follows:

NOTE

The radio in the Technical Support Center has a private line #1 (PL1). This station cannot communicate with stations on PL2, unless the PL feature on those units is turned off.

7.2.1 Using the protocol in step 7.1, substitute the desired station designators:

KGB-430 DLC System Operator

KA-4102 All high hand walkie-talkies (add "REMOTE #--" designator to the call.)

Also on the high hand, but with PL2 feature are:

KOK-912 PA State Police

KOK-913 Beaver County Communications Center

WSU-468 Hancock County Sheriff's Dispatcher

WSU-469 Columbiana County Disaster Services

7.3 For radio-check procedure and other information refer to BVPS OM Chapter 40 Section 4.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.

2. Beaver Valley Power Station Operating Manual

3. Equipment Technical Manual (Filed under DCP 316)

4. Title 10 Code of Federal Regulations Part 50, Appendix E.

5. NUREG-0696 "Functional Criteria for Emergency Response Facilities"

6. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

G. ATTACHMENTS

1. Operation of the Control Transmitters (TX Units)

2. Operation of the Time/Date Generators

3. Operation of the Videotape Recorders

4. Equipment Block Diagram

5. Ventilation System Shutdown

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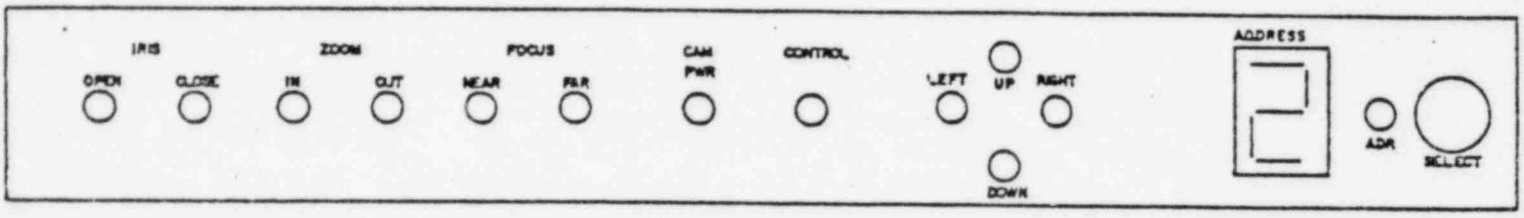
OPERATION OF CONTROL TRANSMITTERS (TX UNITS)



1. A TX unit operates only when the CONTROL button is depressed, and when the unit is synchronized with the camera indicated in the ADDRESS window. If the CONTROL button is released, the function (tilt, pan, etc) being performed will continue until the function button is released. Following that, it will be necessary to depress CONTROL to select another function or to re-use the previous function.

2. Select the camera to be controlled as follows.

   2.1 Check that the two toggle switches on the Control Pair Transfer Panel are set to the "TX1" and "TX2" positions respectively. In this position TX1 controls Cameras 1, 2, and 3; TX2 controls Cameras 4, 5, and 6; and, TX3 Controls Camera 7.

   2.2 On the TX unit, press and hold in the CONTROL button.

   2.3 Note the numeral illuminated in the ADDRESS window. If this is the desired camera, press the ADR button to synchronize the selected camera with the TX unit. The CONTROL button may be released.

   2.4 If a different camera (limited to those available on that particular TX) is desired, press and hold in the CONTROL button. Rotate the SELECT knob until the desired camera number appears. Press the ADR button to synchronize the newly selected camera. The CONTROL button may be released.

3. Operate the selected camera by pressing the CONTROL button and simultaneously pressing one of the function buttons. The function buttons control the camera as follows:

3.1 IRIS-On the color cameras, the lens opening (iris) can be either OPENED or CLOSED to adjust for Control Room light conditions. The iris control on the B and W cameras is automatic and cannot be remotely operated (Cameras 1, 2 and 3).

3.2 ZOOM-On all cameras, the degree of lens magnificaiton can be adjusted either IN or OUT. In the IN direction, the degree of magnficiation increases and the angle of view decreases. In the OUT direction, the degree of magnificaiton decreases, but the angle of view is wider.

3.3 FOCUS-On all cameras, images NEAR and FAR can be brought into focus. The IRIS and ZOOM controls may have an effect on cameras FOCUS. If either the IRIS or ZOOM is changed, the camera may require re-focusing.

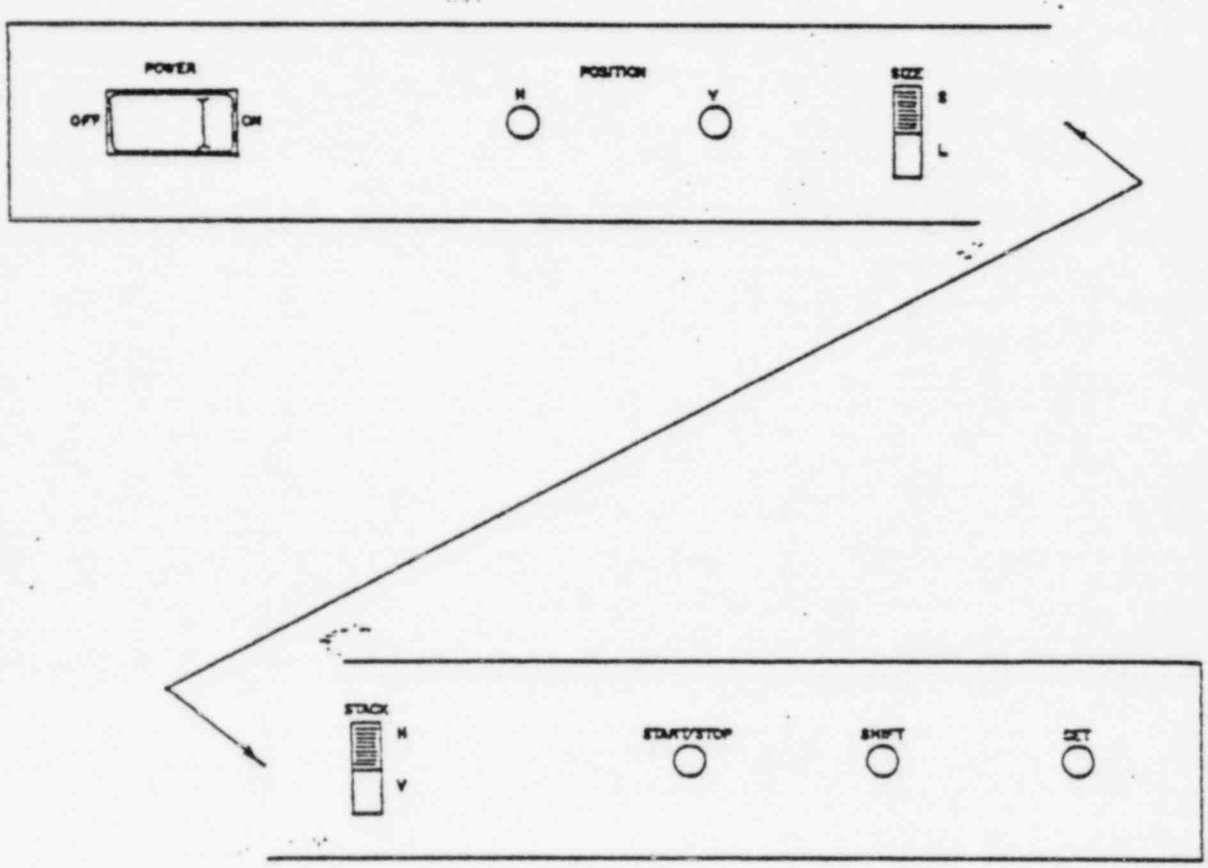
3.4 UP/DOWN-On all cameras, the lens can be tilted up or down.

3.5 LEFT/RIGHT-On all cameras, the lens can be rotated (panned) left or right.

NOTE

Once selected and synchronized, it is not necessary to re-address a camera to change camera focus, zoom, iris, pan or tilt. However, it is necessary to press and hold in the CONTROL button any time the camera is being operated.

OPERATION OF THE TIME/DATE GENERATORS



Once energized and set, the time/date generators will require no further actions on the part of the operator.

1 When the time/date generator is energized, a data and time should appear on the monitor (Monitors 4, 5, and 6 only). Adjust the display as follows:

1.1 Select the size of the display be position the SIZE control to either the "S" (small) or "L" (large) position.

1.2 Select the arrangement of the display by positioning the STACK switch to:
- "H" (horizontal)-date and time will appear side by side on the screen
- "V" (Vertical)-The time will be positioned above the date.

1.3 The position of the display on the screen was set during system testing. If a change is desired, adjust the "H" (horizontal) and "V" (vertical) POSITION controls accordingly with a small screwdriver.

NOTE
The display position on the monitor will also be the approximate position on the videotape recorder (and the subsequent tape playback) image.

2. Correct the displayed time and date as follows:

2.1 With a small pointed object (pencil point, etc), press the START/STOP control. The seconds display will reset to "00" and the timer will stop.

2.2 Press the SHIFT button once. The minutes display will start to flash off and on.

2.3 Press the SET button to change the displayed minutes. Set the minutes display 1 to 2 minutes in advance of the current time to provide sufficient time to adjust remaining digits. When the desired minutes are displayed, release the SET button.

2.4 Press the SHIFT button. The month display will flash. Press the SET button until the proper month appears.

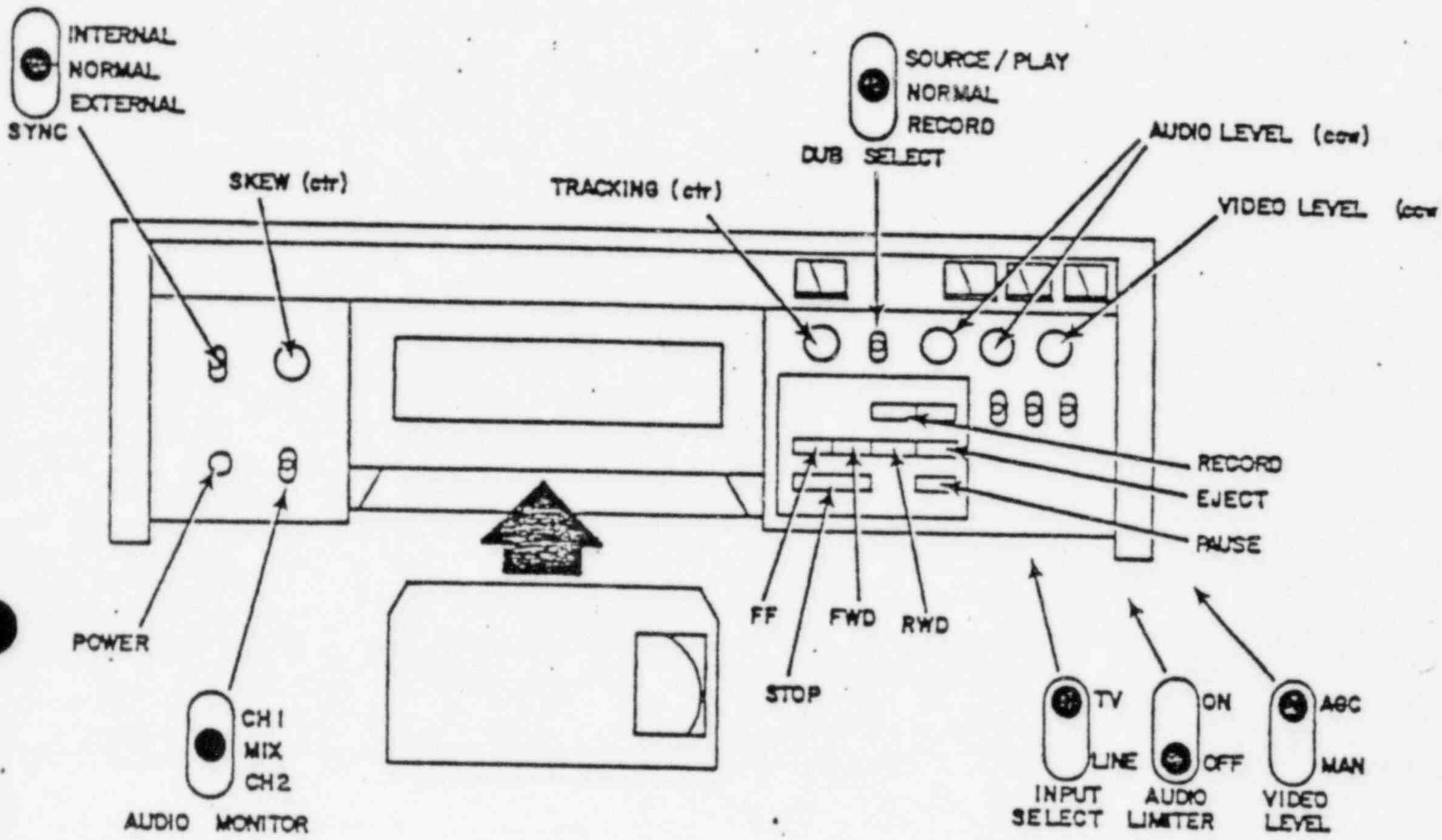
2.5 Press the SHIFT button to adjust the day display. The day digits will flash. Press the SET button until the proper day appears.

2.6 Repeat step 2.5 to adjust the year digits. Note, the year display counts u sequentially from "00". Use caution so as not to bypass the desired year.

2.7 When the date and time have been appropriately set, compare the set time against the current time. When the current time equals the set time, press the START/STOP button. At this point, the timer will start.

2.8 If after setting the date display, the time display is behind current time, it will be necessary to reset the time display. Use caution, since if "59" minutes is passed, the hour digits will advance one hour, and if the hours happened to be "23", the date display would advance one day, and so forth.

OPERATION OF THE VIDEOTAPE RECORDERS



1. To Record

1.1 Set VTR controls as follows:

Control	Position
MEMORY COUNTER	OFF
SYNC	NORMAL
AUDIO MONITOR	MIX
SKEW	Center of rotation
TRACKING	Center of rotation (detent)
DUB SELECT	NORMAL

AUDIO LEVEL (CH1,CH2)	Fully counterclockwise
VIDEO LEVEL	Fully counterclockwise
INPUT SELECT	LINE
AUDIO LIMITER	OFF
VIDEO LEVEL	AGC
ON/OFF	Depressed

1.2 Push EJECT switch to raise deck. Allow the VTR to raise and lower deck. Do not try to close the deck manually.

1.3 Insert a tape cassette completely into the deck. The edge of the cassette with the bevel corners should be inserted first and the tape windows should be visible from the top of the deck. The cassette can not be inserted upside down, do not force it.

1.4 Push REWIND button. Tape will automatically lower and rewind.

1.5 To start recording, push both RECORD and FORWARD buttons simultaneously. The video level is automatically set when the VIDEO LEVEL control is in the "AGC" position.

1.6 On the associated monitor, turn the VTR-LINE switch to "VTR" to monitor the program being recorded.

NOTE

If the time/date generators are not being used, mark the starting time and date on the cartridge box. When the tape is finished, mark the stop time and date.

1.7 To stop recording, push STOP button.

1.8 To eject the tape, push EJECT button.

2. Tape Playback

2.1 When the tape is finished, push STOP.

2.2 Push REWIND. The tape will stop automatically when the rewinding is complete.

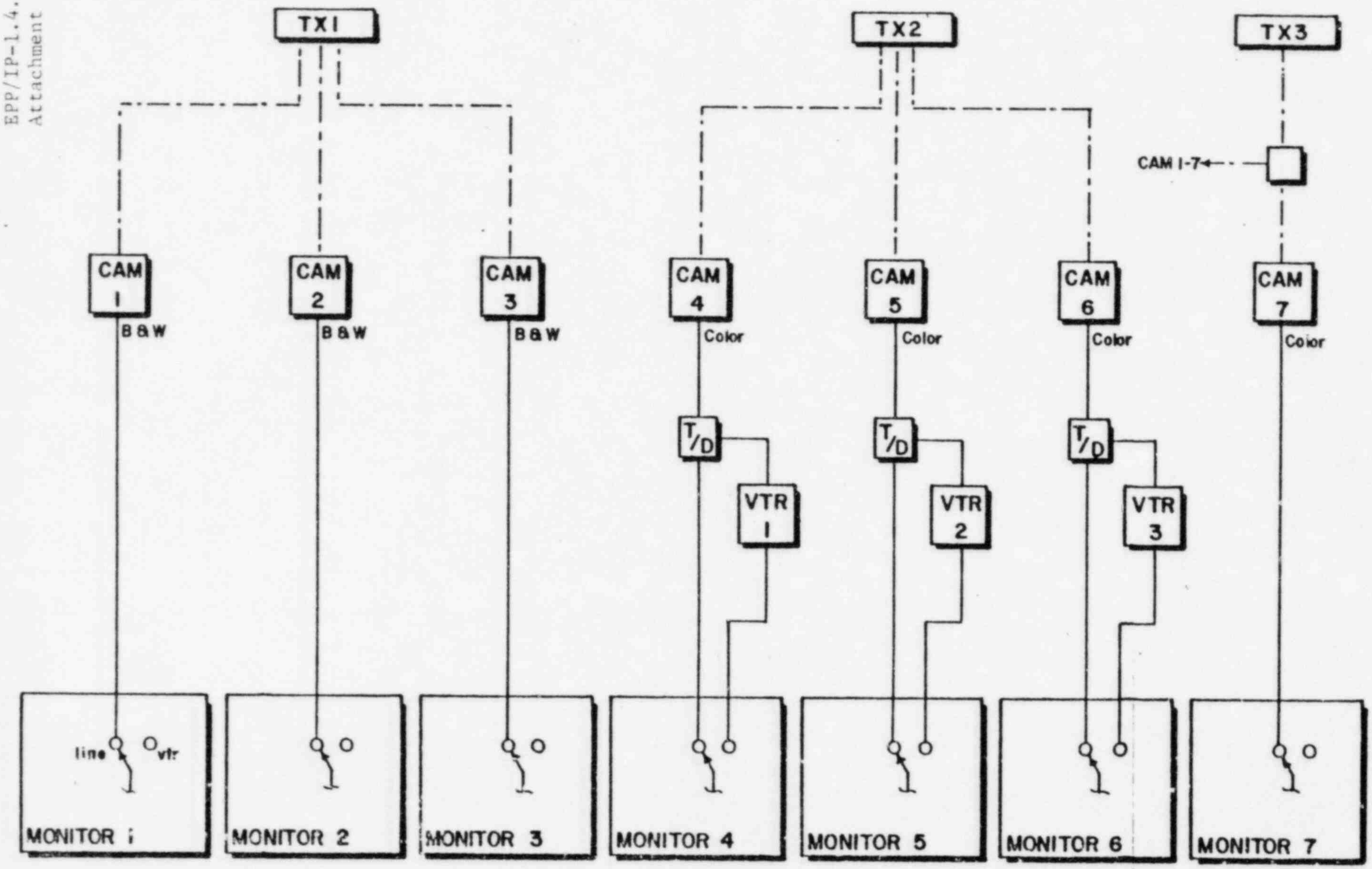
3.3 To playback, push PLAY. Adjust the monitor for proper picture.

3. To Dub Audio

Audio narration can be added to a tape during the recording of a video signal. Use the hand mike to add desired narration. Adjust the AUDIO LEVEL until the meter rarely deflects beyond "0" VU while speaking into the mike.

VIDEO SYSTEM BLOCK DIAGRAM

VTR=Video Tape Recorder
T/D=Time/Date generator
TX=Control Transmitter



VENTILATION SYSTEM SHUTDOWN

To shut down the ventilation system in the Administration Building, perform either of the following:

1. Trip the main switch breaker--JL Breaker #1, Power Panel PP3

   Panel is located in the main power supply room (second door on the left on cooridor leading to exterior stairwell (requires key A-7 or master).

2. Trip fan safety switches:

   AHU #1 Fan (east ventilation unit)

   AHU #2 Fan (west ventilation unit)

   AHU #3 Fan (records room ventilation)

   OR

   Switch the ventilation controls to "off" positoin on the Ventilation control Panel and Records Room Ventilation Panel.

   Safety switches are located in the penthouse (required key A-3 or master).

EMERGENCY SUPPORT CENTER (OSC, ROC, & ENC)
ORGANIZATION AND OPERATION

A. OBJECTIVE

This procedure provides interim instructions for the organization, activation, and operation of the Operations Support Center (OSC), and the Radcon Operations Center. The organization and operation of the Emergency News Center is provided in EPP/IP-9.1, "PID Emergency Plan". Activation of the ENC is discussed in this procedure. This interim procedure implements the provisions of the BVPS Emergency Preparedness Plan in the existing station facilities until such time as the permanent Emergency Response Center facilities become available.

B. PREREQUISITES/INITIAL CONDITIONS

An emergency condition corresponding to an Alert or a higher emergency classification, has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.

C. PRECAUTIONS

None

D. GUIDANCE AND CRITERIA

1. Definitions and Locations of Facilities

1.1 Operations Support Center

1.1.1 The Operations Support Center is located in the Process Instrumentation and Rod Position Instrumentation Area located below the Control Room. This location provides for the assembly of operations support personnel, such as operators, maintenance personnel and/or Radcon personnel if their normal work location in the plant is non-habitable.

1.1.2 The primary objective of the OSC is to provide a location that is likely to be hapitable for emergency and operating personnel to assemble in an emergency, in order to minimize the congregation of excess personnel in the Control Room.

1.1.3 An Operations Support Center Coordinator has been assigned to coordinate the activities of personnel in the OSC. Selected personnel to staff the OSC will be drawn from the assembly areas, and/or, called in by their respective supervision.

1.2 Radcon Operations Center

1.2.1 The Radiation Control Foremen's office is designated as the Radcon Operations Center (ROC). The physical locations of this area is on the Turbine deck (735'). This location serves as a point of assembly and working space for BVPS Radcon personnel. At this location Radcon personnel have access to monitoring equipment, survey records, and other material to support Radcon activities.

1.2.2 In the event the ROC is uninhabitable due to radiological conditions or other hazards, ROC operations will be transferred to the Operations Support Center.

1.2.3 The Radiological Controls Coordiantor will coordiante the activities of Radcon personnel from the TSC.

1.3 Emergency News Center

1.3.1 The Emergency News Center (ENC) is activated by the DLC Public Information Department for emergency conditions classified as Site Area or General Emergencies. When activated, the Emergency News Center will be located at the Willows Motel, in Industry, PA. This location provides a point of assembly for media correspondants covering the emergency situation. The DLC Public Information Department is responsible for directing and coordinating the activities at the ENC. EPP/IP-9.1 describes the emergency public relations program. If the Willows Hotel is in a sector where offsite protective actions are required (Sector C, approximately 2.5 miles downwind), the Emergency News Center will be located in Pittsburgh at a location designated in EPP/IP-9.1.

1.3.2 All requests for information from media representatives shall be directed to the DLC Public Information Department at the DLC Corporate Offices initially, and at the ENC following activation of that facility.

E. PROCEDURE

1. Shift Supervisor/Emergency Director

Upon occurrence of an off-normal or emergency condition at the facility which has been classified as an Alert, Site Area Emergency, or General Emergency, the on-duty Shift Supervisor shall proceed as follows:

NOTE

This procedure is primarily related to activation of the emergency organization at the ENC/OSC. The Shift Supervisor shall implement appropriate corrective actions to contend with the situation and to mitigate possible deterioration in plant conditions in accordance with the BVPS Operating Manual while simultaneously implementing this procedure and other appropriate Emergency Implementing Procedures.

1.1 Designate a Communications and Records Coordinator from the on-duty shift, if not already designated, to commence call-out of personnel.

1.2 If requested by offsite agencies, select a Station Operations and Maintenance Training Instructor, from the Monthly Phone List, to serve as BVPS representative at the county EOC(s). Have the Communications and Records Coordinator notify the selected individuals(s).

1.3 Request the DLC Public Information Division to activate the ENC in the event of Site or General Emergencies.

1.4 Maintain communications with the emergency support centers, and with the BVPS representatives at the EOCs, through the Communications and Records Coordinator.

1.5 Maintain emergency support centers until such time as the emergency is terminated, and normal operations are restored or a recovery orgainzation is established. Provide for personnel rotation if the duration of the emergency warrants such action.

1.6 If it becomes necessary to implement a site evacuation, have Emergency Coordinators designate selected individuals to remain behind, and assign these personnel to the Operations Support Center (OSC). Typical personnel might include representatives from each station craft group. The selection of personnel will depend on the nature of the emergency.

2. Operations Support Center Coordinator

2.1 As requested by the Emergency Director, and as appropriate, direct the activities of emergency teams that have been formed to augment the shift Emergency Squad.

2.2 Maintain accountability of personnel in the Operations Support Center and those personnel deployed in emergency teams.

2.3 Respond to the requests from the TSC/Control Room for assignment of personnel assembled in the OSC to various tasks related to the emergency.

2.4 Perform other tasks identified in Section E.8 of EPP/IP-1.4. "Technical Support Center Organization and Operation".

3. BVPS Representative at Offsite County EOCs (upon request)

4.1 Assist Federal, state, and local emergency management personnel with interpretation of technical data reported by the Station.

4.2 Answer emergency related questions of Federal, state, and local authorities to the extent of his ability. Obtain answers for other questions from the Station.

4.3 Remain alert to actions in the EOC, and report significant actions and/or decisions to the EOF/TSC.

NOTE

The BVPS Representative to the EOCs shall refrain from providing information to memebers of the general public or to media representatives. All such requests shall be referred to DLC Public Information, or to the ENC.

4. Other Station Personnel

5.1 Station personnel not having specific emergency assignments will continue with their normal work unless otherwise directed via Station Page Party System announcements, or as directed by their respective supervision.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures

2. Beaver Valley Power Station Operating Manual

3. Title 10 Code of Federal Regulations Part 50, Appendix E

4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

G. ATTACHMENTS

1. None

Duquesne Light

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EMERGENCY OPERATIONS FACILITY ORGANIZATION AND OPERATION

A. OBJECTIVE

This procedure provides interim instructions for the organization, activation, and operation of the Emergency Operations Facility (EOF). This procedure implements the provisions of the BVPS Emergency Preparedness Plan in the existing interim facility until such time as the permanent EOF is constructed. With appropriate minor modificaitons, this procedure also applies to the alternate EOF at South Heights, PA.

B. PREREQUISITES/INITIAL CONDITIONS

An emergency condition, classified as Site Area or General Emergency, has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.

C. PRECAUTIONS

None.

D. GUIDANCE AND CRITERIA

1. Emergency Operations Facility Function

1.1 The Emergency Operations Facility (EOF) provides for overall direction and control of the Duquesne Light Company response to the emergency and provides for coordiantion of offsite response with onsite response, specifically including offsite dose projection and monitoring efforts.

1.2 The EOF provides a working location for DLC senior management, DLC environmental assessment and dose projection personnel, Federal Agency personnel, and State and Local agency representatives.

1.3 The EOF provides a central reporting location for contractors, industry advisors (INPO), DLC personnel outside of the Nuclear Division, CAPCO personnel, and other similar groups. These reporting personnel will be appropriately processed and dispatched to their respective assignments.

1.4 The EOF will serve as the location from which initial recovery operations will be directed and coordianted. Actual recovery functions will be performed at the EOF or at other locations as applicable to the recovery effort.

1.5 The EOF will be the locaiton from which the USNRC's response team will be directed and controlled. Members of this response team may be assigned to other emergency centers such as the Technical Support Center or the Control Room.

1.6 The functions of the EOF will be served, as necessary, in the Technical Support Center (TSC) for Alert Emergencies, and in the Emergency Control Center for Unusual Event Emergencies.

2. Emergency Operations Center Operability Criteria

2.1 The Emergency Recovery Manager shall declare the Emergency Opertaions Center (EOF) activated when, to his judgement the number of personnel and equipment available are adequate to perform the assigned function of the EOF. As guidance the listing below suggests the minimum levels required. However, depending on the emergency conditions, more or less personnel may be required. The Emergency Recovery Manager shall take whatever appropriate action necessay consistant while minimizing Control Room congestion and interference.

2.1.1 Personnel (min.):

- Emergency Recovery Manager
- Offsite Agency Laison
- Dose Assessment Personnel
- Communications Personnel (min. 2)

2.1.2 Equipment Operable (min.):

- Audio Communications to TSC and Control Room
- PAX and Bell Phone LInes
- Radio Communications Link (Dose Assessment Monitors)

2.2 Activation of the Emergency Operations Facility.

2.2.1 The Emergency Recovery Manager shall declare the Emergency Operations Facility activated when the following have occurred:

3. Activation of the Emergency Operations Facility

3.1 The Emergency Recovery Manager shall declare the Emergency Operation's Facility activated when the following have occurred:

- Sufficient EOF staff members are present depending on the actual emergency, as identified in Section 2.
- Sufficient communications equipment are operative for EOF personnel to perform assigned actions.

NOTE

Depending on the type of emergency, the Emergency Operation's Facility may be activated without complete staffing or communications equipment.

3.2 The Emergency Recovery Manager shall inform the Emergency Director that the EOF is activated and of the transfer of responsibilities.

3.3 The Emergency Recovery Manager shall direct the Shift Supervisor to announce over the Plant Page Party System that the EOF is activated.

4. Emergency Operations Facility Location

4.1 The interim Emergency Operations Facility is located in the basement of the Administration Building on the river side at the cooling tower end of the building (area occupied by the Nuclear Safety and Licensing Department). The Manager, Nuclear Safety and Licensing's office will serve as the Emergency/Recovery Manager's office during emergency response activities. Dose Projection is performed in a near-by room serving both the TSC and EOF. See Attachment 1.

4.2 If access to the EOF is restricted due to radiological or other conditions, the EOF function will be relocated to the DLC T & D South Heights district office until such time as access is restored. This facility is provided with emergency equipment and materials to support the initial response.

5. EOF Organizational Responsibilities

5.1 The functional responsibilities of the individual EOF personnel (emergency managers) are indentified in Section 5 of the BVPS Emergency Preparedness Plan and in various EPP Emergency Implementing Procedures, and are summarized in sections E.1 to E.7 of this EPP/IP.

6. Emergency Manager Rotation

6.1 In the event the emergency condition is adjusted to be a long-term emergency due to the nature and extent of the emergency conditions, the Support Services Manager, with the concurrence of the Emergency/Recovery Manager, shall establish a watch rotation schedule for EOF personnel. The Communications and Records Coordinator in the TSC should be consulted to determine any previous arrangements or information on personnel Call-out.

7. Interface with TSC or other Emergency Organizations

7.1 Immediate response, assessment, and the implementation of protective (on-site) and corrective actions pertaining to an emergency condition at the Beaver Valley Power Station is the responsibility of the BVPS Emergency Director. He shall have the authority to act on the behalf of Duquesne Light Company in all matters concerning an emergency, at least until such time as the scope, severity, and potential radiological consequences have been assessed, and the appropriate corrective actions and onsite protective actions have been implemented, or until relieved of this responsibility by higher DLC management. For Site Area or General Emergencies, the overall responsibility and authority for the DLC emergency response shifts to the Emergency/Recovery Manager. Following the critical period, but still with complete regard for health and safety, major decisions and corporate commitments are the responsibility of DLC management. Although in an emergency condition, the BVPS Emergency Director may seek and act upon the advice of others outside of Duquesne Light Company (such as State and Federal regulatory agencies, and/or industry advisory groups) the responsibility and authority for response remains as established above.

7.2 When the Emergency Operations Facility (EOF) is activated, the Emergency/Recovery Manager assumes responsibility and authority for the overall DLC emergency response, with particular emphasis on offsite DLC activities. At this time, the Emergency Director and the TSC staff will concern themselves with the onsite aspects of the emergency response. An announcement will be made to notify personnel the EOF has been officially activated.

7.3 The BVPS Emergency Director shall maintain communications with the operating or emergency organization at the Shippingport Atomic Power Station in the event of an emergency at BVPS or at SAPS. Section 5.4.1 of the BVPS Emergency Preparedness Plan describes the interface between the BVPS and SAPS emergency organizations.

7.4 The BVPS Emergency/Recovery Manager shall ensure that the primary emergency response agencies of the jurisdictions within the emergency planning zone (identified on the Emergency Notificaiton Call-list) are fully apprised of the situation at the facility and the possible offsite consequences, if any. The responsibilities of offsite organizations with regard to an emergency at BVPS are identified in the BVPS EPP. In summary, offsite emergency response groups have responsibility for all offsite actions for the protection of the general public, following notification by BVPS that an emergency exists.

8. Working Space for Augmentation Personnel

8.1 The EOF provides space for a limited number of personnel. Additional working space (pending radiological conditions) for augmentation personnel could be made available at the following locations:

8.1.1 Unit 1 Trailer City

8.1.2 Unit 2 Construction Office complex

8.1.3 BVPS Administration Building

8.1.4 New Training Building

8.1.5 DLC South Heights District Office

8.1.6 Johnson Street School

8.2 The Support Services Manager will arrange for the use of these facilities on an as-needed basis during the emergency response effort.

E. PROCEDURE

1. Emergency Director

Upon occurrence of an off-normal or emergency condition at the facility, the on-duty Shift Supervisor shall proceed as follows:

NOTE

This procedure is primarily related to activation of the emergency organization. The Shift Supervisor shall implement appropriate corrective actions to contend with the situation and to mitigate possible deterioration in plant conditions in accordance with the BVPS Operating Manual while simulatneously implementing this procedure and other appropriate Emergency Implementing Procedures.

1.1 Upon classification of the abnormal condition as a Site Area or General Emergency, notify the designated Emergency/Recovery Manager to activate the Emergency Operation Facility in accordance with this EPP/IP.

1.2 When the designated Emergency/Recovery Manager, or an alternate, is in the EOF and the EOF is operational, the Emergency Director will transfer the responsibility and authority for overall emergency response to the Emergency/Recovery Manager. At this time, the Emergency Director will concern himself with onsite concerns only, directing the onsite response as provided in EPP/IP-1.4.

1.3 When the EOF is activated, provide technical updates to the Emergency/Recovery Manager on plant systems status and radiological effluent assessment activities and implementation of onsite protective and corrective actions; and when appropriate, make recommendations on possible offsite protective actions to the Emergency Recovery Manager.

1.4 When the EOF is activated and as necessary, request additional technical, engineering, material, or manpower assistance from the Emergency/Recovery Manager to supplement the resources of the onsite organization.

1.5 Perform other tasks as assigned by the Emergency/Recovery Manager.

2. Emergency/Recovery Manager

2.1 Immediately upon notificaton of an existing or potential Site Area or General Emergency, assume the role of the Emergency/Recovery Manager. Maintain this position until relieved by another designated Emergency/Recovery Manager, or until the emergency condition is terminated.

2.2 Appoint interim emergency managers from available qualified personnel, for assistance with current and continuing emergency control until such time as the designated managers are available; but assume these responsibilities until the positions are filled.

2.3 Direct and coordinate the activities of the designated emergency managers, the Emergency Director, the emergency coordiantors, and other Duquesne Light personnel in the assessment of plant status and radiological effluent releases; implementation of protective and corrective actions onsite; assessment, monitoring, or projection of offsite radiological conditions; the recommendation of offsite protective actions; and the exchange of technical and operational information within the Duquesne Light emergency organizations and with offsite emergency resposne organizations.

NOTE

When activated, the Emergency/Recovery Manager is the only Duquesne Light individual authorized to make recommendations of offsite protective actions to offsite response agencies. For lesser emergencies, the Emergency Director has this authority.

2.4 Respond to requests for assistance from the Emergency Director, with additional technical, engineering, material, or manpower resources as necessary; arrange for this assistance from outside sources if such requests cannot be met with the resources of the Nuclear Division.

2.5 Remain alert to radiological conditions or other hazards having the potential for significant effect on the health and/or safety of Duquesne Light personnel and other individuals assigned to Duquesne Light emergency response facilities; and where necessary implement appropriate protective measures, including emergency exposure limits and/or thyroid prophylaxis for Emergency Operations Facility and other offsite Duquesne Light personnel.

2.6 Through the Offsite Agency Liaison, coordinate the response of the Duquesne Light emergency organization with that of the local, county, state, and federal response organizations.

2.7 When appropriate and necessary, implement a recovery organization as provided in Section 9 of the BVPS EPP.

2.8 Apprise the Vice President, Nuclear Division, and other appropriate DLC management of the emergency response efforts on a continuting periodic basis.

2.9 Arrange for appropriate and timely exchange of data between the emregency organization and the DLC Public Information Department.

2.10 Continue operations at the EOF until such time as the emergency is terminated, and normal operations are restored or a recovery organization is established.

2.11 A chronological log of EOF activities shall be maintained by the emergency manager having responsibility for the respective activities. All documents related to the emergency response, such as dose projection calcuations, survey results, etc. shall be maintained for subsequent review and evaluation.

3. Assistant to the Emergency/Recovery Manager

NOTE

Prior to activation of the EOF, this individual serves as Assistant to the Emergency Director.

3.1 Review BVPS EPP and EPP/IP's applicable to the particular emergency condition and advise/prompt the Emergency/Recovery Manager in procedural requirements.

3.2 Assist the Emergency/Recovery Manager in performing administrative tasks to free the Emergency/Recovery Manager for decision making.

3.3 Assist other Emergency Managers with their assigned functions, provided this assistance does not conflict with paragraphs 3.1 and 3.2 of this EPP/IP.

3.4 Perform other tasks assigned by the Emergency/Recovery Manager

4. Support Services Manager

4.1 Coordinate provisions for transportation, food and other logistical support for emergency personnel with corporate personnel.

4.2 Provide personnel and work schedules for relieving emergency personnel.

4.3 Act as a liaison with outside groups in providing additional resources such as manpower, equipment, supplies and transportation.

4.4 Direct and coordiante the activities of the security force via the Security Coordinator, assisting as necessary in restructuring the security plan and procedures to contend with the emergency conditions, and establishing appropriate security in the DLC emergency response facilities.

4.5 Direct and coordinate the establishment of appropriate administrative processing for incoming onsite augmentation forces. Attachment 2 provides a form for assigning incoming personnel as part of this processing.

4.6 Serve as the interface with Duquesne Light General Services Division for augmentation of onsite material and personnel resources in order to facilitate requisition and purchasing, and deployment of DLC corporate resources in response to requests from the Emergency Director and/or the Emergency/Recovery Manager.

4.7 Perform other tasks assigned by the Emergency/Recovery Manager.

5. Engineering Manager

5.1 Direct and coordinate engineering efforts related to the emergency response.

5.2 Assist technical and support personnel at the TSC with the engineering solutions to the plant assessment and corrective actions.

5.3 Advise the Emergency/Recovery Manager on matters related to the engineering of short-term modifications to plant systems necessary to mitigate the consequences of the accident and/or recover the plant.

5.4 Serve as liaison between the BVPS emergency organization and the Duquesne Light Engineering and Construction Division.

NOTE

The Division of engineering activities between the TSC, the EOF, and DLC E&C is as follows: The TSC will develop conceptual solutions to engineering problems; the EOF engineering personnel will develop these conceptual designs into appropriate engineering drawings, specifications, and requisition documents, utilizing DLC E&C and vendor resources as necessary.

5.5 Perform other tasks assigned by the Emergency/Recovery Manager.

6. Offsite Agency Liaison

6.1 Resolve questions concerning Operating License requirements with Nuclear Regulatory Commission representatives.

6.2 Serve as liaison between representatives of the state and local goverments present in the Emergency Operations Facility and the Beaver Valley Power Station emergency organization. This liaison is primarily for the exchange of operational information (less radiolgoical assessment) and coordination of offsite activities with those of the Beaver Valley Power Station.

NOTE

The division of information activities between the EA & DP manager, the Communications and Records Coordinator, and the Offsite Agency Liaison is as follows: the Communications and Records Coordinator perform all official communications between the DLC emergency organization and off-site groups, including all initial and follow-up notifications; the EA & DP Manager coordinates radiological assessment activities and the exchange of radiological assessment data with offsite radiological agencies through agency liaison personnel at the EOF or via the Communications or Records Coordinator.

6.3 Perform other tasks assigned by the Emergency/Recovery Manager.

7. Environmental Assessment and Dose Projection Coordinator

7.1 Direct and coordinate all offsite radiological assessment activities, including dose projection, offsite monitoring, environmental monitoring, etc.

7.2 Evaluate field monitoring, environmental sample analysis data, and where appropriate, process stream sample analysis data to assess radiological impact of the emergency.

7.3 Based on assessment data, recommend appropriate offsite protective actions to the Emergency/Recovery Manager for relay to offsite agencies.

7.4 Where possible, advise the Operations Coordinator and the Emergency Director on the scheduling of planned emergency releases to take advantage of favorable meteorological conditions.

7.5 Interface DLC offsite monitoring activities with that of the offsite agencies and serve as the sole technical contact for offsite agencies with regard to DLC radiological assessment activities.

7.6 Designate appropriate personnel to assist with the EA & DP functions.

7.7 Perform other tasks as assigned by the Emergency/Recovery Manager.

8. Performance of EOF Functions During Unusual Events or Alerts

8.1 During Unusual Event or Alert Emergencies, the Emergency Operations Facility will not normally be activated. The functions served by the Emergency Managers in the EOF are not expected to be necessary to the degree which requires designation of specific individuals to perform these functions. These functions are instead assigned to Emergency Coordinators in the TSC, or are available through normal administrative channels.

Unusual Events and Alert Emergencies	Site Area and General Emergencies
Emergency Director	Emergency/Recovery Manager
EP & DP Coordinator	EA & DP Coordinator
Director of Administrative Services*	Support Services Manager
Technical Support Coordinator	Engineering Manager
Communications & Records Coordinator	Office Agency Laison
PID Representative	Public Information Manager

*Normal Organization title.

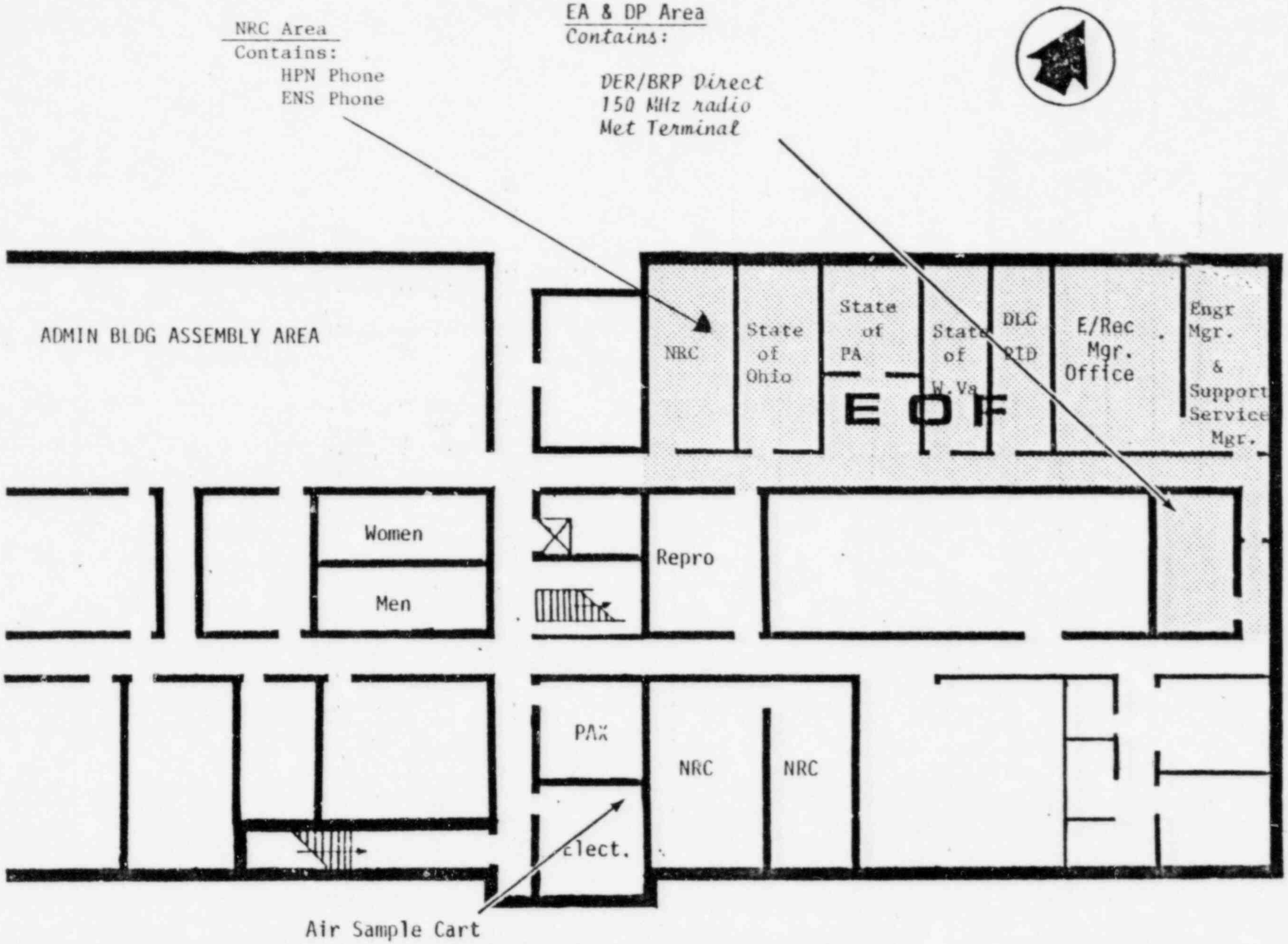
F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures
2. Beaver Valley Power Station Operating Manual
3. Title 10 Code of Federal Regulation Part 50, Appendix E
4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluaton of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

G. ATTACHMENT

1. EOF Map
2. Assignment Data Sheet

ADMINISTRATION BUILDING BASEMENT---EMERGENCY OPERATIONS CENTER



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CONTRACTOR/VENDOR AUGMENTATION PERSONNEL ASSIGNMENT

Name: ______________________________

SSN: ______________________________

Parent Company: ______________________________

Occupation or Title: ______________________________

You have been assigned to assist in emergency response activities at: ____________.
(Location)

At this location, you will report to: ____________ title ____________
(Name)

You are expected to report at ____________ am/pm on ____________ 19 ______.

You will serve in the following capacity: ______________________________

____

You will (will not) attend training at ____________, on ________ 19 ______.
(Location)

at ____________ am/pm.

NOTE

While you are performing emergency response or recovery efforts at the Beaver Valley Power Station, you will be expected to follow approved BVPS procedures, unless otherwise directed by DLC Supervisory personnel. Vendor procedures and/or procedures of other utilities shall not be used at BVPS unless their use is specifically approved by the BVPS Onsite Safety Committee. THERE SHALL BE NO EXCEPTION TO THIS RULE. No onsite information shall be released to the news media or to members of the public except by DLC Public Information Department personnel. If you are approached by news media personnel, refer all questions to the DLC Emergency News Center.

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EMERGENCY RADIOLOGICAL MONITORING

A. OBJECTIVE

This procedure provides guidance and instructions to TSC/EOF personnel for the direction and coordination of emergency radiological monitoring. Monitoring for both airborne and liquid releases are addressed. Monitoring for airborne releases includes onsite and offsite radiation, contamination, and airborne activity surveys, while monitoring for liquid releases includes river water and public drinking water sampling and analyses. Environmental radiological monitoring is also addressed. The EA and DP Coordinator is responsible to ensure the actions outlined in this procedure are implemented when necessary.

The following procedures provide instructions to monitoring team personnel for the performance of the radiological monitoring. Except where specifically identified, survey equipment and laboratory analyses will be performed in accordance with existing radcon procedures and chemistry procedures.

° EPP/IP-2.2 "Onstie Monitoring for Airborne Release"
° EPP/IP-2.3 "Offsite Monitoring for Airborne Release"
° EPP/IP-2.4 "Offsite Monitoring for Liquid Release"
° EPP/IP-2.5 "Emergency Environmental Monitoring"

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition has been declared at the Beaver Valley Power Station, as provided in the BVPS Emergency Preparedness Plan.

C. PRECAUTIONS

None

D. GUIDANCE AND CRITERIA

1. General

1.1 The extent and degree of radiological monitoring following a release of radioactive material will depend on the nature, the severity, the physical/chemical form, and the radioistopic compositoin of the release. The Emergency Director, with the assistance and advice of the Radiological Control Coordinator and the Environmental Assessment and Dose Projection Coordinator, will determine the extent and nature of post-accident radiological monitoring.

1.2 For Site Area or a General emergency, the BVPS offsite radiological monitoring teams may be supplemented by the radiological monitoring teams of the various State and Federal govermental agencies. Once such agencies are activated, the Environmental Assessment and Dose Projection (EA & DP) Coordinator will coordinate the activities of the BVPS offsite radiological monitoring teams with the activities of the monitoring teams of the various agencies. Since is will take about 3 to 4 hours from the time of notification for the DER/BRP radiological monitoring teams to arrive, the responsibility for initial offsite monitoring rests with the Beaver Valley Power Station.

1.3 For releases which occur during normal working hours, sufficient radcon personnel will be available to support several monitoring teams. During other times, it may only be possible to deploy one monitoring team. In these circumstances, the Emergency Director will assign priorities for radiological monitoring based on the known or expected extent and severity of the release and/or related radiological conditions, while calling in additional personnel.

2. Onsite Monitoring

2.1 In the event of a radioactivity release determined or estimated to be equivalent to 100 times the applicable technical specificaiton, a monitoring team should be dispatched to perform a beta-gamma dose rate survey onsite. The purpose of this survey is to confirm that a release if (has) taking place, and to assess the need for protective actions. The starting point of this survey should be consistent with the expected source and magnitude of the release and extend out to the site perimeter in the sector with the highest projected dose rate. This survey may be limited to specific survey points rather than a "scan" survey in order to obtain initial data rapidly. Following this, time and personnel permitting, more extensive scan surveys may be performed if warranted. Based on the survey results at this point, the monitoring team should proceed along the site perimeter, for a sufficient distance in either direction to ensure that the maximum levels have been identified. This survey should be performed periodically if the release continues, and if personnel are available. See also Steps 3.3, 3.4, 3.5, 3.7 and 3.9 of this EPP/IP.

2.2 If a local evacuation has been initiated, based on area radiation monitors or continuous air monitors, an appropriate survey should be performed to verify the alarm condition, and to attempt to determine the reason for the increase from normal levels.

2.3 If a unit evacuation is declared, a survey should be performed in the primary assembly areas to assess the habitability of the assembly area, in addition to the survey described in paragraph 2.2. The evacuation plans for the contract groups and the administration building provide for dose rate and airborne acitivity determination by personnel at the assembly areas. A sample runner should be dispatched to these areas to collect the airborne samples and transport them to the counting facility for analysis.

2.4 A survey should be performed in the Control Room to verify the reading of the Control Room Area Radiation Monitor (RM-1RM-213), and an air sample for particulate and iodine radioactivity should be obtained, if the monitor indicates the need, or if airborne activity is suspected.

NOTE

Appropriate isotopic identificaiton should be performed on a priority basis if the result of the gross counting of a Control Room air sample exceeds 1 E-9 C/cc (less noble gases). Based on this analysis, respirators should be used to maintain personnel exposure less than 40 MPC-hours/week (less noble gases) while minimizing unnecessary respirator use.

3. Offsite Monitoring for an Airborne Release

3.1 In the event of an airborne release of radioactive material determined or estimated to be equivalent to 100 times the applicable technical specification or higher, monitoring teams should be dispatched to perform appropriate radiological surveys in the general path of the plume to confirm dose projection results.

3.2 Because of the complex terrain in the environs of the Beaver Valley Power Station, it is not possible to determine the plume trajectory with a degree of certainty. Thus, EA & DP personnel must remain alert to the effects that terrain features could have on the passing plume. The BVPS meteorological tower only indicates wind conditions near the site, and therefore can only serve to indicate the initial trajectory of the plume. The following should be considered when dispatching monitoring teams to ensure that the survey points approximate the plume trajectory:

3.2.1 During stable atmospheric conditions (stability classes E, F, or G) with low wind speeds, as normally occurs during night hours, th plume will tend to "puddle" in the valley surrounding the station. As wind speed increases, the usual overall wind direction is westerly, following the valley floor.

3.2.2 During unstable atmospheric conditions (stability calsses A, B, and C), the plume will normally travel along the valley floor towards Beaver.

3.2.3 From the information above, the monitoring teams should be primarily directed along the river valley, with lesser emphasis on inland survey points.

3.2.4 If a hill is in the path of the ground level plume, the plume will normally travel around the hill, instead of over the hill. The monitoring teams should be directed likewise.

3.2.5 Consideration should be given to the smaller valleys and other low-laying areas which intersect the Ohio River Valley as some of the plume could divert into these areas or "puddle".

3.2.6 The dose projection procedures assume that all releases are ground level releases in which the plume disperses as it spreads along the ground, with the highest concentrations close to the release point. For elevated releases, the plume will pass overhead and will touch down at some distance downwind (within 2 miles depending on stability class, wind speed, and terrain height).

At the point of touchdown, the plume can be treated as a ground level release. Air samples taken between the Station and the touchdown point will not indicate the true airborne activity, but will indicate a much lower value. This should be kept in mind when evaluating offsite air samples with lower than expected airborne activity levels.

3.2.7 If the plume does leave the valley, the direction of plume travel can be reasonable expected to be similar to the direction of higher winds as indicated by the 500' level on the BVPS meteorological tower or as reported by the National Weather Service. For this reason, after primary consideration is given to the areas along the river, secondary survey consideration should be given to areas downwind (500' winds).

3.3 Based on the results of the dose projectiosn and prevalent wind directions as addressed in paragraph 3.2, direct the offsite monitoring team(s) to the affected areas along the path of the plume. Provide monitoringteams with appropriate survey maps which indicate the desired survey locations and/or survey routes. Possible survey routes are shown on Attachments 2 through 5 attached to EPP/IP-2.3 "Offsite Monitoring for Airborne Releases" and are included in the survey kits. The Beaver Valley Power Station has responsibility for initial radiological monitoring throughout the ten-mile EPZ, if necessary, until radiological monitoring teams from State and Federal agencies can be deployed.

3.3 Unless directed otherwise, the monitoring team will perform the following surveys at each survey point:

3.3.1 A beta-gamma radiation survey at waist level (ambient radiation levels)

3.3.2 A particulate and radioiodine air sample

In addition to the measurements at specific locations, monitoring team personnel will have the beta-gamma survey instrument operational while enroute between survey locations and will perform a moving survey.

3.4 Normal activated charcoal cartridges will be used for all air samples until such time as field screening, or laboratory analyses performed on the air samples returned from the field indicate that significant radioiodine may have been released. In that case, silver zeolite cartridges should be used for subsequent sampling. The Emergency Director and/or the EA & DP Coordinator will determine which sample media are suitable and will direct the monitoring teams accordingly. If a monitoring team reports an air sample with activity greater than the field screening level on a normal activated charcoal cartridges. If the backup silver zeolite cartridge also has an activity in excess of the field screening level, both cartridges should be returned to the Station (or to another designated locaton) for analysis with laboratory instrumentation as soon as possible. In any case, all sample media obtained by the monitoring teams will be returned to the Station for further analysis.

NOTE

Silver Zeolite (and charcoal cartridges if desired) may be re-used during offsite monitoring in a particular emergency, as long as the cartridges exhibit count rates less than background, and are undamaged. in Particular, silver zeolite cartridges used for low-level environmental monitoring (negligible count rate) could be advantageously used within the plant in areas of high radioiodine concentration. The EA & DP Coordinator and/or the Radiological Controls Coordinator will direct the re-use of sample cartridges if warranted.

3.5 The Emergency Director and/or the EA & DP Coordiantor may establish an air sample volume different from that specified in EPP/IP-2.3 if preliminary field measurements indicate that minimum sensitivity (MDA) of the analysis with the reduced or increased sample volume is compatible with the observed measurements. A sample volume of 10 ft^3 through a silver zeolite cartridge is necessary to obtain a minimum sensitivity of 1.5 E-8 μCi/cc for iodine with a background of 2000 cpm. The minimum sensitivity increases proportionally as sample volume decreases.

3.6 All survey results (raw data) will be called into the TSC/EOF via DLC radio or public telephone as they are obtained. All results will be logged by the data takers assigned by the Communications and Records Coordinator, and provided to the EA & DP Coordinator for evaluation. The EA & DP Coordinator will apprise the Emergency Director of Significant results or trends.

3.7 Results of offsite surveys should be used to confirm the dose projection results. The Emergency Director, and/or the EA & DP Coordiantor will direct continuing offsite monitoring, based on the results of the preliminary monitoring results, including expanding or decreasing the survey area, as necessary. Offsite monitoring will continue for as long as the as is necessary for the plume to pass, for offsite airborne radioactivity and dose rates to return to levels permitted in unrestricted areas (10 CFR 20.105 and .106), and/or with mutual concurrence of DLC, Federal and state authorities.

3.8 EPP/IP-2.3 provides a conservative alternate method for determining thyroid dose rate from iodine based on the gamma radiation levels observed during the offsite monitoring. This method is based on the USEPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents. The alternate method should be used only if the primary methods cannot be used due to high ambient radiation levels or other conditions. As soon as possible, more appropriate iodine sampling should be performed.

4. Offsite Monitoring for Liquid Release

4.1 Offsite monitoring in response to a release of radioactive material to the Ohio River will depend on the nature and extent of the release, whether or not the release has been stopped, the release path, and the river flow rate. The Emergency Director, with the advice of the EA & DP Coordinator will determine the extent of river sampling efforts.

4.2 At flow rates related to normal pool stage in the river, a release of radioactivity will be carried downstream (and diluted) at about 2 miles per hour. The dilution volume in the river at the lowest level is approximately 4.9 E6 gpm and, because of the river flow and possible release patterns, total river dilution can be assumed to occur prior to the Midland Water Treatment Plant intake (located at Crucible Steel). This is a conservative assumption due to the cross-current location of the Midland water intake. The river activity may be higher at the East Liverpool water intake due to mixing.

4.3 The EPA drinking water standards (based on the activity at the intake of the treatment plant) are more restrictive than the 10 CFR 20 Appendix B MPCs. A copy of the EPA MPCs is attached to EPP/IP-2.7, "Liquid Release Determination". If the result of sampling at the Midland Water Treatment Plant indicates activity(s) in excess of the EPA MPCs, sampling should be performed at the East Liverpool Water Treatment Plant intake, and at locations further downstream until activity levels have decreased to within the EPA MPCs.

4.4 A monitoring team should be sent to the Midland Water Plant with the monitoring van (if available) as soon as possible following the detection of an unplanned or uncontrolled release of radioactive liquids (Unusual Event--see EPP/I-1, Recognition and Classificaiton of Emergencies". A sample should be taken as soon as the monitoring team arrives. This sample should be analyzed in the van, or if the van is not available, sent or brought back to the Station, or to another designated location, for analysis. Samples should be taken every fifteen minutes until such time as the release is stopped and for a period equal to twice the river transit time between the release point and the water plant intake thereafter. (At normal pool stage, the river velocity is approximately 2.5 mph.) Between the fifteen minute samples, monitoring teams should collect a composite sample, using the normal environmental monitoring proportional sampling pump. This type of pump is located at both the Midland and East Liverpool treatment plants.

NOTE

It normally takes approximately four hours for raw water to transit through the Midland Water Treatment Plant, depending on operations. As a result, representative samples will not be immediately available, but may require periodic sampling for four hours or more. As an alternate, treatment plant personnel may be able to suggest alternate sampling points.

4.5 Sample results should be compared to environmental sampling program backgrounds. If background data is not available, or if applicability of data is questionable, water samples upstream of the BVPS site should be taken and analyzed to provide a river background activity value.

4.6 River and water treatment sampling could be appropriate in the event of a massive airborne radioactivity release that results in significant offsite contamination, particularly if it is raining or snowing during the release. However, such sampling has a lower priority than airborne radioactivity sampling due to the difference in level of public risk. The Emergency Director, with the advice of the EA & DP Coordinator will direct that river and drinking water sampling be performed in this event as soon as a monitoring team(s) is available.

4.7 For any liquid release, the source of the release should be identified as soon as possible and a sample drawn from that source (diluted if necessary) for use in standardizing the analytical equipment.

5. Emergency Environmental Monitoring

5.1 Table 3.2-1 of the BVPS Environmental Technical Specifications (ETS) identifies requirments for post-accident environmental monitoring. Additional samples, or samples taken ahead of schedule, may be necessary if the event involves releases of radioactive material offsite. The Emergency Director with the advice of the EA & DP Coordinator will determine if increased monitoring is required and will determine the type and location of the additional samples.

5.2 EPP/IP-2.5, "Emergency Environmental Monitoring" contains instructions for monitoring teams and include, as attachments, maps of the normal environmental sampling stations and locations.

5.3 As a general guideline, additonal samples should be taken within the area defined by the 50 mrem isodose (dose equavilent) line.

5.4 DER/BRP in Pennsylvania, and correspoding agencies in Ohio and West Virginia will perform environmental monitoring in their affected areas and will control the handling of potentially contaminated foodstuffs (including milk). The EA & DP Coordinator will coordiante the BVPS environmental monitoring with that performed by these agencies, and will provide these agencies with the results of environmental monitoring performed by BVPS monitoring teams.

E. PROCEDURE

1. Upon indication that a release of radioactivity to the atmosphere equivalent or greater than 100 times the applicable technical specificaiton (corresponds to an Alert); or a liquid release in excess of technical specificaitons (Unusual Event) perform the following, as appropriate:

1.1 Activate monitoring teams. Teams will be comprised of a radcon technician and one other individual, such as an engineer.

NOTE

If monitoring team members are required during off-hours to augment the Emergency Squad and qualified personnel are not available onsite, off-duty personnel may be called in.

1.2 Mark onsite and/or offsite survey maps with desired survey points chosen on the basis of the information in Section D of this EPP/IP.

1.3 Designate monitoring teams in accordance with their assigned survey route. For example, NW monitoring team or SW monitoring team. Additional monitoring teams in a sector should be identified in an appropriate manner. For example, NW monitoring team alpha and NW monitoring team bravo.

1.4 Arrange for transportation of the monitoring teams, using available company vehicles, or private cars if sufficient company cars are unavailable.

1.5 If dose projection results indicate the need, direct monitoring team personnel to use respirators and/or other appropriate protective clothing.

NOTE

The use of protective clothing and respirators by offsite monitoring teams may create unwarranted public concern, especially if sheltering or evacuation has not been recommended by public officials. For this reason, protective clothing and respiratory protection equipment should only be used when necessary. Since particulates will generally not be present, this equipment should not be necessary.

1.6 Onsite and offsite monitoring teams shall retain their normal TLD badges and dosimeters, and shall be issued high range self-reading pocket dosimeters while performing assigned surveys.

1.7 Notify the guardhouse of the departure of monitoring team members to avoid delays or confusion at the guardhouse.

1.8 The Communications and Records Coordinator and/or assigned data takers will receive and record reported monitoring results. All data will be reported to the EA & DP Coordinator.

NOTE

Communications between the monitoring teams and the TSC/EOF will normally be via DLC radio. Since radio communications at this frequency can be intercepted by commercially available scanners, all communications related to reporting survey data must be brief and factual, and free of exclamatory or alarming expressions. To the extent possible, survey points should be referred to by map designator (survey point A2-1) rather than the actual location. The Communicaitons and Record Coordinator should ensure that communicaitons are proper.

1.9 The EA & DP Coordinator, with the assistance of designated persons, will evaluate reported data, perform necessary calculations, recheck calculations and report significant data and trends to the Emergency Director. Significant information/data will be relayed (via Operations circuit) to the Control Room, if deemed necessary by the Emergency Director.

1.10 Continue monitoring efforts, redirecting monitoring teams as appropriate, based on survey and meteorological data. Terminate monitoring as provided in Section D of this EPP/IP.

1.11 Determine the need for increased environmental monitoring and direct monitoring teams as appropriate. The EA & DP Coordinator will coordinate the continued offsite monitoring with Federal and state authorities, as applicable.

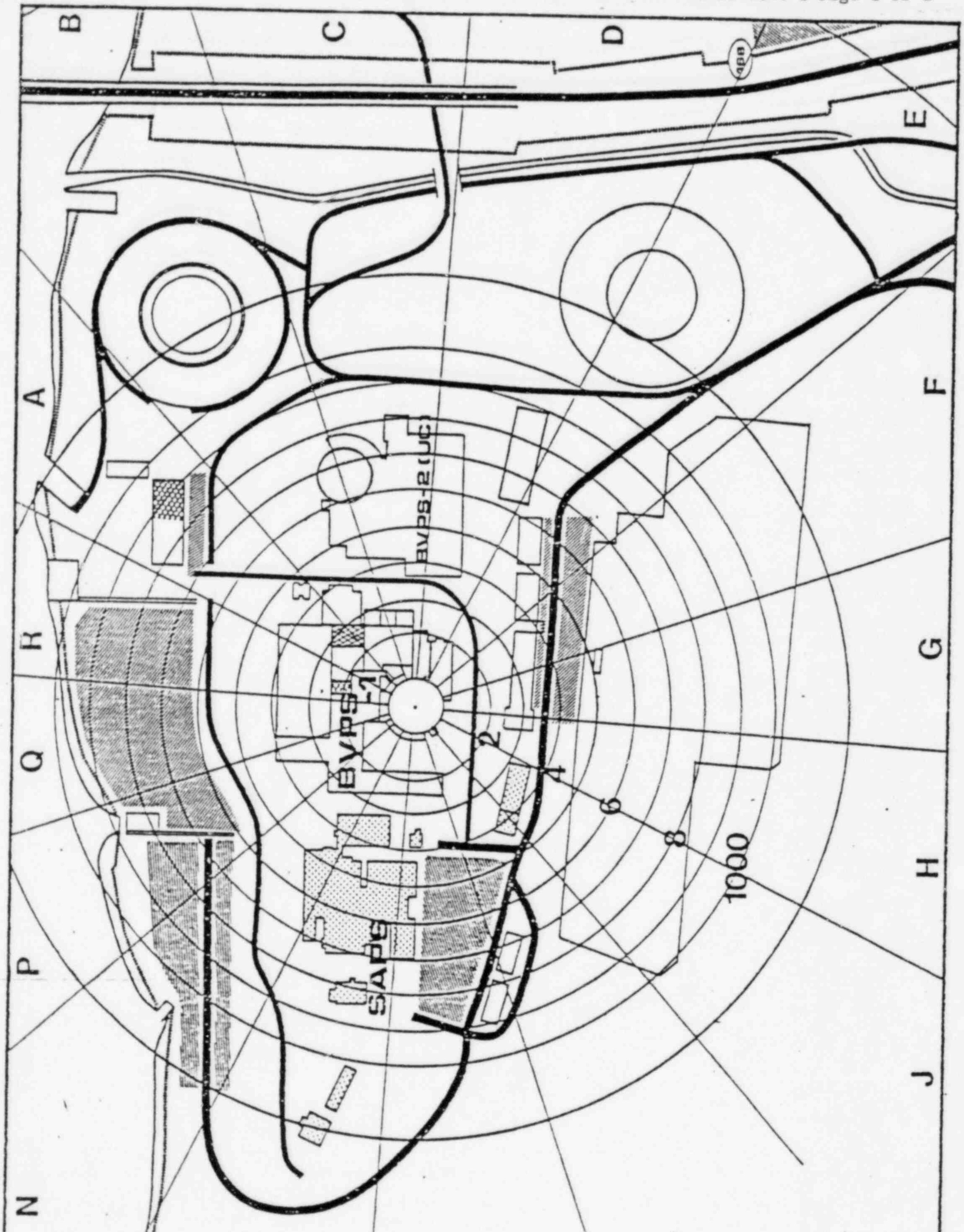
1.12 The exposure of monitoring team personnel should be periodically evaluated, and reliefs provided, if necessary. The Radiological Control Coordinator shall apprise the EA & DP Coordinator and/or Emergency Director of personnel exposure status as necessary. Every effort must be made to maintain personnel exposure as low as reasonable acheivable and within 10 CFR 20 limits. Personnel exposures in excess of 10 CFR 20 limits are authorized only under the provisions of EPP/IP-5.3, "Emergency Radiation Exposure Criteria and Control".

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.
2. Title 10 Code of Federal Regulations Parts 20 & 50
3. NUREG-0654/FEMA REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants".
4. USEPA 570/9-76-003 "National Interim Primary Drinking Water Standards", Appendix B
5. "Plan for Nuclear Power Generating Station Incidents" Commonwealth of Pennsylvania Dept of Environmental Resources, Bureau of Radiation Protection
6. Beaver Valley Power Station Offsite Dose Calculation Manual (ODCM)
7. Beaver Valley Power Station Environmental Technical Specificiatons
8. NRC Inspection Report 50-334 #81-27 (Step D.3.2 provides compensatory measures for plume uncertainty finding).

G. ATTACHMENTS

1. BVPS Site Map
2. NW Offsite Survey Map
3. SW Offsite Survey Map
4. SE Offsite Survey Map
5. NE Offsite Survey Map
6. EPP Survey Log (EA & DP Personnel)
7. Projected Adult/Child Thyroid Dose vs Gamma Radiation Dose Rate
8. BVPS Unrestricted Area Boundary for Effluent Releases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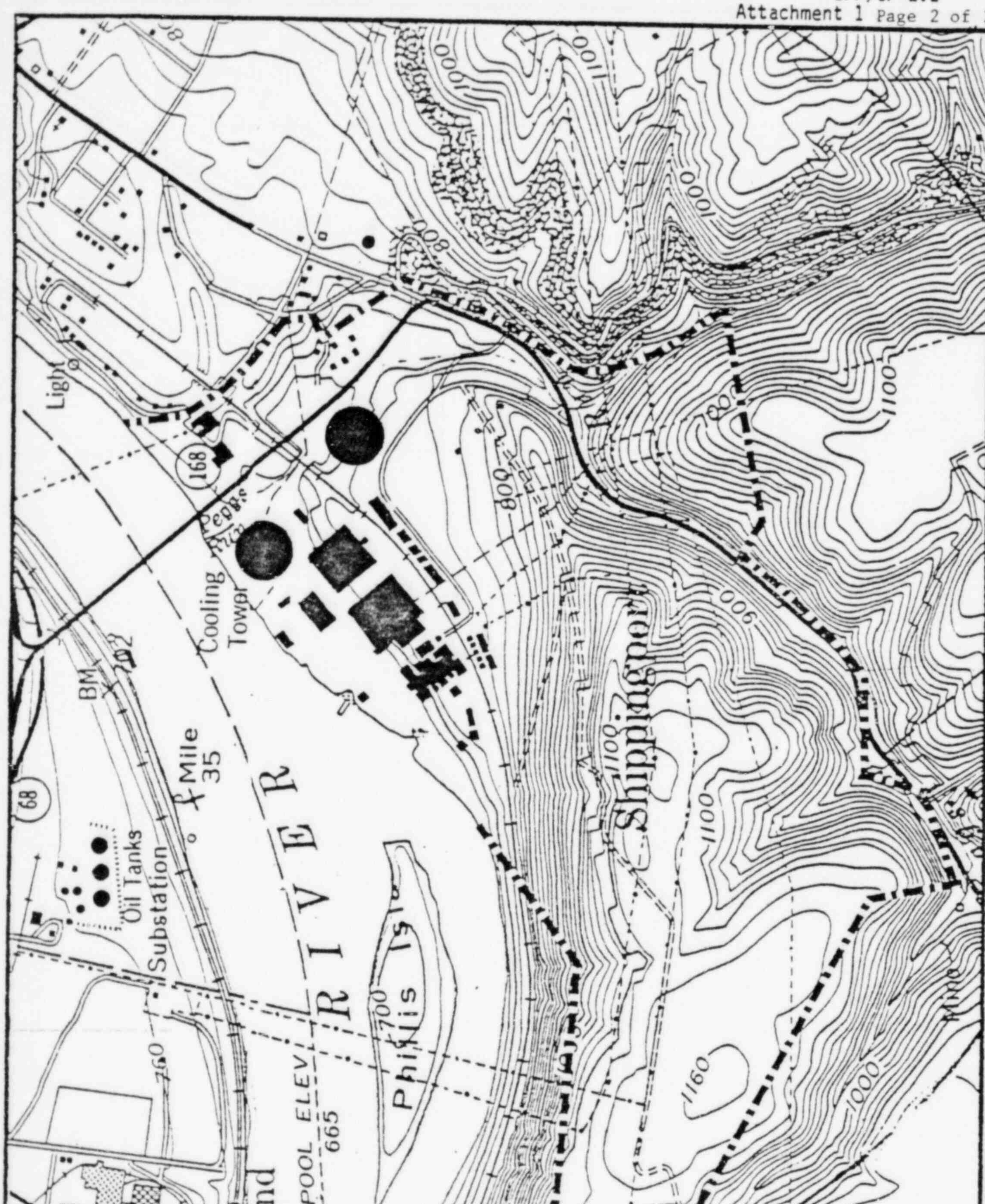
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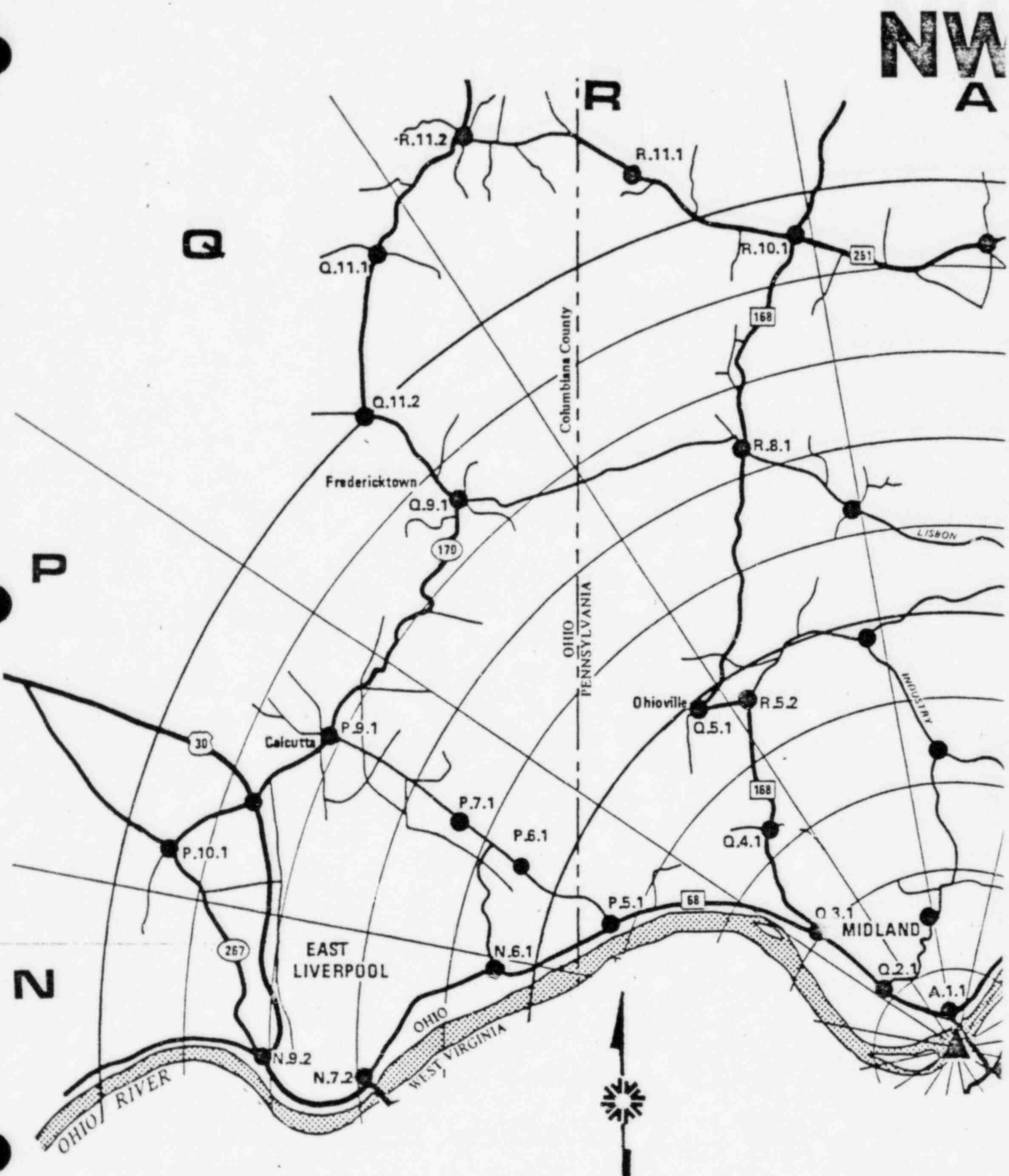
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Fredericktown
Q.9.1
LISBON
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OHIO
PENNSYLVANIA
INDUSTRY
Ohioville
R.5.2
Q.5.1
30
Calcutta
P.9.1
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P.7.1
P.10.1
P.6.1
Q.4.1
P.5.1
68
Q.3.1
MIDLAND
267
EAST
LIVERPOOL
N.6.1
Q.2.1
A.1.1
OHIO
WEST VIRGINIA
N.9.2
N.7.2
OHIO RIVER

NORTHWEST 5 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
Q.3.1	Intersection of Rt's 168 & 68	Good
P.5.1	Intersection of Rt. 68 and Calcutta-Smith Ferry Rd	Good
P.6.1	Top of Hill Calcutta-Smith Ferry Rd	Good
N.6.1	Intersection of Fisher Rd & Ohio Rt. 39	Poor

NORTHWEST 10 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 bridge on the Midland side of Ohio River	Good
Q.3.1	Intersection of Rt. 168 & 68	Good
Q.4.1	Entrance to Meadowbrook Estates	Good
Q.5.1	Ohioville Vol. Fire Dept. off Rt.168	Good
R.8.1	Intersection of Rt. 168 & Lisbon Rd	Good
R.10.1	Intersection of Rt's 251 & 168	Poor
R.11.1	Intersection of Rt. 251 & State Gamelands Rd	Poor
R.11.2	Intersection of Rt's 170 & 251	Poor
Q.11.1	Intersection of Rt. 170 & Clarkson Pancake Rd	Fair
Q.11.2	Intersection of Rt. 170 & Entr. to Beaver Creek State Park	Good
Q.9.1	Intersection of Rt. 170 & Fredrickstown Rd	Poor
P.9.1	Intersection of Rt. 170 & Calcutta-Smith Ferry Rd	Poor
P.10.1	Intersection of Rt. 267 & T928 (Irish-Ridge Rd)	Poor
N.9.2	Intersection of Rt's 267 & 39/7 (School)	Poor
N.7.2	Emergency stopping area before Ohio/W.Va. bridge Rt.30	Good
P.5.1	Intersection of Rt. 68 & Calcutta-Smith Ferry Rd	Good

NORTHWEST ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 bridge on the Midland side of Ohio River	Good
Q.3.1	Intersection of Rt. 168 & 68	Good
Q.4.1	Entrance to Meadowbrook Estates, Rte. 168	Good
R.5.2	Intersection of Tuscarawas Rd. and Rte. 168	Good
Q.5.1	Ohioville Vol. Fire Dept. off Rt.168	Good
R.8.1	Intersection of Rt. 168 & Lisbon Rd	Good
R.10.1	Intersection of Rt's 251 & 168	Poor
R.11.1	Intersection of Rt. 251 & State Gamelands Rd	Poor
R.11.2	Intersection of Rt's 170 & 251	Poor
Q.11.1	Intersection of Rt. 170 & Clarkson Pancake Rd	Fair
Q.11.2	Intersection of Rt. 170 & Entr. to Beaver Creek State Park	Good
Q.9.1	Intersection of Rt. 170 & Fredrickstown Rd	Poor
P.9.1	Intersection of Rt. 170 & Calcutta-Smith Ferry Rd	Poor
P.10.1	Intersection of Rt. 267 & T928 (Irish-Ridge Rd)	Poor
N.9.2	Intersection of Rt's 267 & 39/7 (School)	Poor
N.7.2	Emergency stopping area before Ohio/W.Va. bridge Rt.30	Good
P.5.1	Intersection of Rt. 68 & Calcutta-Smith Ferry Rd	Good
P.6.1	Top of hill Calcutta-Smith Ferry Rd	Good
P.7.1	Calcutta Church (Calcutta-Smith Ferry Rd)	Good

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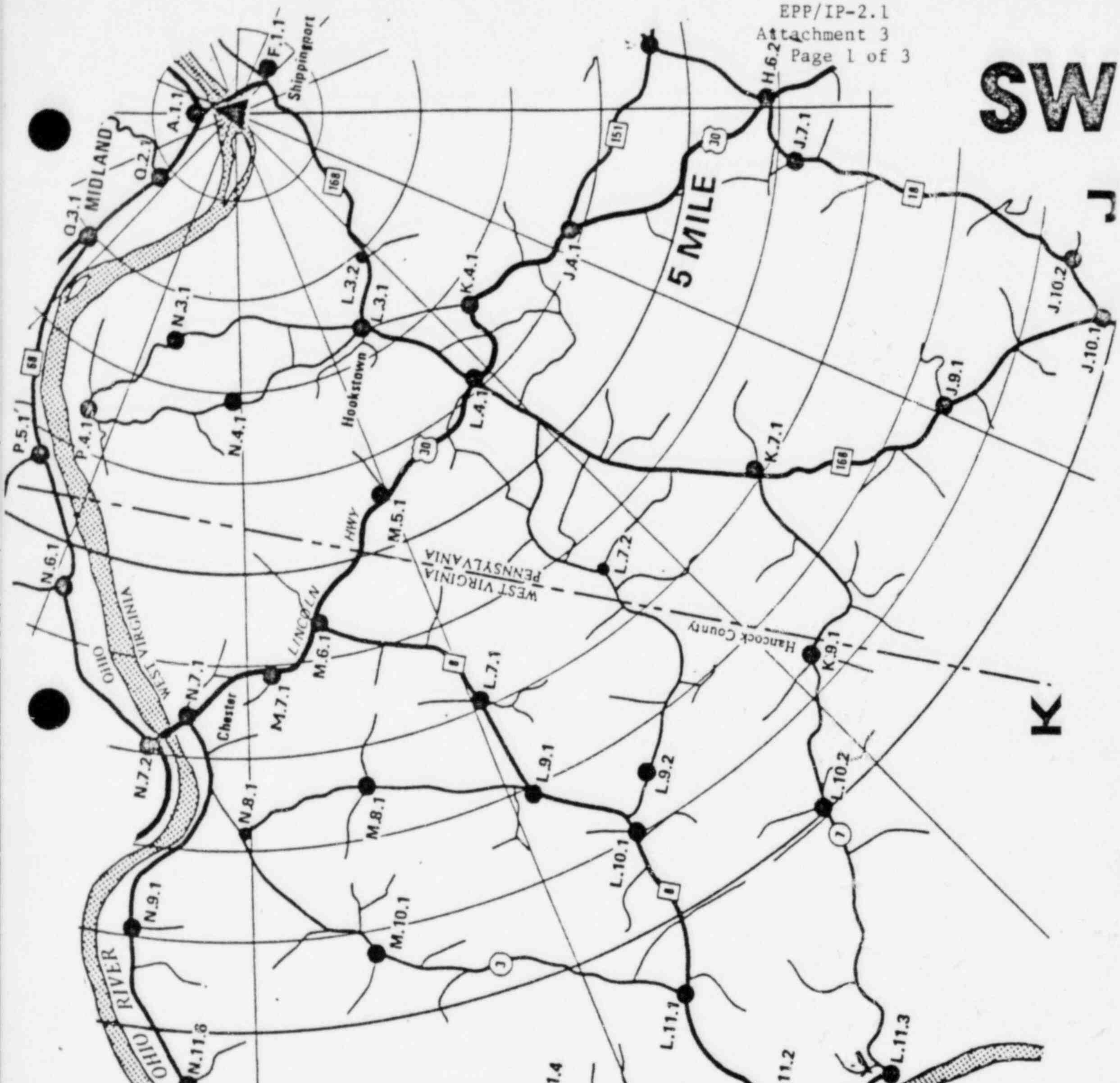
SW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OHIO
WEST VIRGINIA
M.6.1
8
L.7.1
N.7.1
M.7.1
Chester
K
N.7.2
L.9.1
L.9.2
N.8.1
M.8.1
L.10.2
L.10.1
7
8
N.9.1
M.10.1
RIVER
3
L.11.1
OHIO
N.11.6
L.11.3
L.11.2
M.11.4
2
M.11.5
2
N
L
M

SOUTHWEST 5 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
L.3.1	Major Intersection in Hookstown	Good
L.4.1	Intersection of Rt. 168 & Rt. 30	Good
J.4.1	Intersection of Rt. 30 & Rt. 151	Good
H.5.1	Intersection of Rt. 151 & Rt. 18	Good
H.6.2	Intersection of Rt. 18 & Rt. 30	Good
M.5.1	West on Rt. 30 1.2 miles Past L.4.1 or East on Rt. 30 1.2 miles Past M.6.1	Good
M.6.1	Intersection of Rt. 30 & Rt. 8	Good
N.7.1	West Virginia-Ohio Bridge, Rt. 30	Good
N.6.1	Intersection of Rt. 39 & Fisher Road, Winkys	Good
Q.2.1	Entrance to Crucible Steel, Rt. 68 Midland	Good
A.1.1	Midland Side of Rt. 168 Bridge	Good

SOUTHWEST 10 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
L.3.1	Major Intersection in Hookstown	Good
L.4.1	Intersection of Rt. 168 and Rt. 30	Good
J.4.1	Intersection of Rt. 30 & Rt. 151	Good
H.5.1	Intersection of Rt. 151 & Rt. 18	Good
H.6.2	Intersection of Rt. 18 & Rt. 30	Good
J.10.1	Intersection of Rt. 18 & Rt. 168	Good
J.9.1	Entrance to Youth Forestry Camp	Good
K.7.1	Intersection of Hanover Road & Rt. 18 2.7 mile from J.9.1 or 3.3 mile from L.4.1	Good
K.9.1	Intersection of Rt. 7 & Rt. 24	Poor
L.10.2	Intersection of Rt. 7 & Rt. 26, Sewage Lift Station	Poor
L.11.3	Intersection of Rt. 2 & Rt. 7, Substation	Poor
L.11.2	Intersection of Rt. 2 & Rt. 8	Poor
M.11.4	Bridge of Tomlinson Lake, Rt. 2	Poor
M.11.5	Intersection of Rt. 2 & Rt. 208	Poor
N.11.6	Intersection of Rt. 2 & Rt. 3/6, R.R. Crossing	Poor
N.9.1	Intersection of Rt. 2 & Rt. 1, Value King	Fair
N.7.1	West Virginia-Ohio Bridge, Rt. 30	Good
N.6.1	Intersection of Rt. 39 & Fisher Road, Winkys	Good
Q.2.1	Entrance to Crucible Steel, Rt. 68 Midland	Good
A.1.1	Midland Side of Rt. 168 Bridge over Ohio	Good
L.4.1	Intersection of Rt. 168 & Rt. 30	Good

SOUTHWEST ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
L.3.1	Major Intersection in Hookstown	Good
L.4.1	Intersection of Rt. 168 & 30	Good
J.4.1	Intersection of Rt. 30 & Rt. 151	Good
H.5.1	Intersection of Rt. 151 & 18	Good
H.6.2	Intersection of Rt. 18 & Rt. 30	Good
J.10.1	Intersection of Rt. 18 & Rt. 168	Good
J.9.1	Entrance to Youth Forestry Camp	Good
K.7.1	Intersection of Hanover Road & Rt. 18, 2.7 mile from J.9.1, 3.3 mile from L.4.1	Good
M.5.1	West on Rt. 30 1.2 miles Past L.4.1 or East on Rt. 30 1.2 miles Past M.6.1	Good
M.6.1	Intersection of Rt. 30 & Rt. 8	Good
N.7.1	West Virginia - Ohio Bridge, Rt. 30	Good
A.1.1	Midland Side of Rt. 168 Bridge	Good
Q.2.1	Entrance to Crucible Steel, Rt. 68/168	Good
N.6.1	Intersection of Rt. 39 & Fisher Rd, Winkys	Good
N.4.1	Second Bridge Past Hookstown Intersection	Poor
P.4.1	Dravo, Keystone Division	Fair
N.3.1	Top of Hill Next to DLCO Radio Tower	Good
L.7.1	Intersection of Rt. 8 & Rt. 14	Good
L.9.1	Intersection of Rt. 8 & Rt. 5	Good
L.10.1	Tomlinson Run State Park Entrance, Rt. 8	Fair
L.11.1	Intersection of Rt. 8 & Rt. 3	Fair
L.9.2	Oak Glen High School, Rt. 33	Fair
L.7.2	Intersection of Rt. 33 & Rt. 14/2	Good
N.9.1	Intersection of Rt. 2 and Rt. 1, Value King	Fair
N.11.6	Intersection of Rt. 2 & Rt. 3/6, RR Crossing	Poor
M.11.5	Intersection of Rt. 2 & Rt. 208	Poor
M.11.4	Bridge Over Tomlinson Lake, Rt. 2	Poor
L.11.2	Intersection of Rt. 2 & Rt. 8	Poor
L.11.3	Intersection of Rt. 2 & Rt. 7, Substation	Poor
L.10.2	Intersection of Rt. 7 & Rt. 26, Sewage Lift Station	Poor
K.9.1	Intersection of Rt. 7 & Rt. 24	Poor
M.10.1	Intersection of Rt. 3 & Rt. 208	Poor
N.8.1	Intersection of Rt. 3/2 & Rt. 5	Poor
M.8.1	Intersection of Rt. 5 & Rt. 208	?

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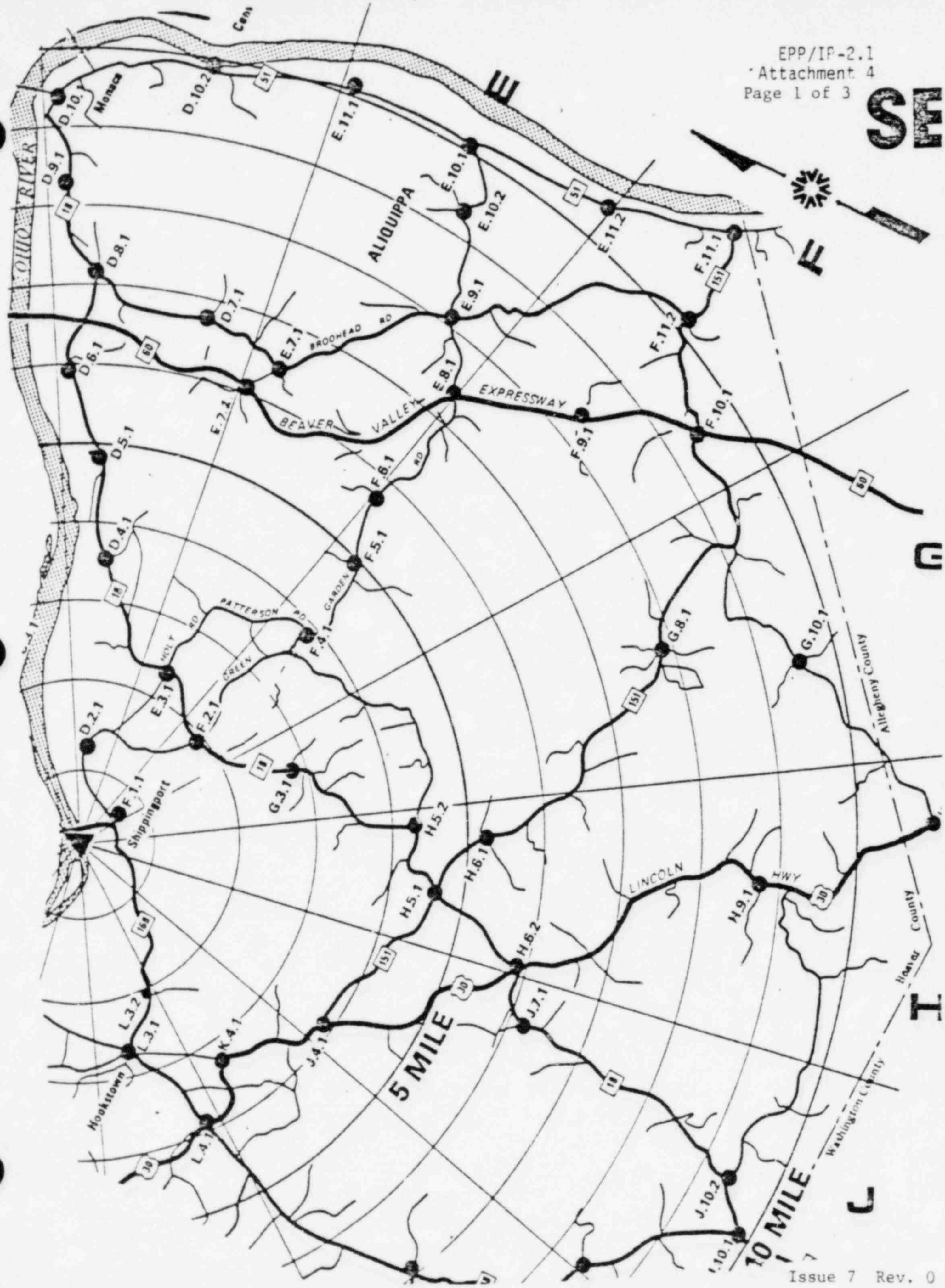
SE
E
F
G
H
J
OHIO RIVER
Monaca
ALIQUIPPA
BROOHEAD RD
BEAVER VALLEY EXPRESSWAY
PATTERSON RD
HOLT RD
GARDEN
GREEN
Shippingport
Hookstown
LINCOLN HWY
5 MILE
10 MILE
Allegheny County
Beaver County
Washington County
D.10.1
D.10.2
E.11.1
E.10.1
E.10.2
E.11.2
F.11.1
D.9.1
D.8.1
D.7.1
E.9.1
F.11.2
E.7.1
D.6.1
E.7.2
E.8.1
F.9.1
F.10.1
D.5.1
F.6.1
D.4.1
F.5.1
F.4.1
E.3.1
F.2.1
D.2.1
G.3.1
F.1.1
H.5.2
H.6.1
G.8.1
G.10.1
H.5.1
H.6.2
H.9.1
J.7.1
J.4.1
K.4.1
L.3.2
L.3.1
L.4.1
J.10.2
J.10.1

SOUTHEAST 5 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
D.2.1	Bruce Mansfield Plant Entrance	Good
F.2.1	Intersection of Rt. 18 & Green Garden Rd.	Good
E.3.1	Intersection of Rt. 18 & Holt Rd. 1.1 mile from F2.1	Good
D.4.1	"Y" in road at Rt. 18 and Mowry Rd	Good
D.5.1	Main Plant Entrance ARCO/POLYMERS, Rt. 18	Poor
D.6.1	St. Joe Mineral Entrance, Rt. 18	Good
E.7.2	Center Exit of Rt. 60	Good
E.8.1	Aliquippa Exit of Rt. 60	Good
F.6.1	Intersection of Penny Hollow Park Rd & Green Garden Rd	Good
F.4.1	Intersection of Green Garden Rd & Patterson Rd	Good
G.3.1	Superior Mobile Homes, Rt. 18	Good
H.5.1	Intersection of Rt's 18 & 151	Good
J.4.1	Intersection of Rt's 30 & 151	Good
L.3.1	Main Intersection in Hookstown	Good

SOUTHEAST 10 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
D.2.1	Bruce Mansfield Entrance, Rt. 18	Good
F.2.1	Intersection of Rt. 18 & Green Garden Rd	Good
E.3.1	Intersection of Rt.18 & Holt Rd	Good
D.4.1	"Y" in Road at Rt. 18 and Mowry Rd	Good
D.5.1	Main Plant Entrance to ARCO/POLYMERS, Rt. 18	Poor
D.6.1	St. Joe Mineral Entrance, Rt. 18	Good
D.8.1	Intersection of Rt's 18 & 51, Beaver Valley Mall	Good
D.9.1	Gee Bee Shopping Center, Rt. 18/51	Good
D.10.1	Pheonix Glass Parking Lot, Penn Ave Monaca	Fair
D.10.2	Intersection of Constitution Blvd. and Monaca Rd	Poor
E.11.1	Entrance to West Aliquipa, Constitution Blvd.	Poor
E.10.1	Entrance to Aliquippa from Constitution Blvd.	Poor
E.10.2	Intersection of Monaca Rd & Franklin Ave, Alq.	Good
E.11.2	Ambridge - Aliquippa Bridge, Constitution Blvd.	Poor
F.11.1	Philips Power Station, Constitution Blvd.	Poor
F.11.2	Intersection of Rt's 51 & 151	Poor
F.10.1	Intersection of Rt's 151 & 60. 60 overpasses 151	Poor
G.10.1	2nd Intersection past Booktown (off Rt. 151)	Poor
H.11.1	Intersection of Road C4059 & Rt. 30	Poor
H.9.1	Raccoon Park Entrance, Rt. 30	Poor
J.10.1	Intersection of Rt's 18 & 168	Good
H.6.2	Intersection of Rt's 18 & 30	Fair
J.4.1	Intersection of Rt's 30 & 151	Good
L.3.1	Main Intersection in Hookstown	Good

SOUTHEAST ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
D.2.1	Bruce Mansfield Entrance, Rt. 18	Good
F.2.1	Intersection of Route 18 and Green Garden Rd	Good
E.3.1	Intersection of Rt. 18 and Holt Rd	Good
D.4.1	"Y" in Rd at Rt. 18 and Mowry Rd	Good
D.5.1	Main Plant Entrance to ARCO/POLYMERS, Rt. 18	Good
D.8.1	Intersection of Rt. 18 and Rt. 51 Beaver Valley Mall	Good
D.9.1	Gee Bee Shopping Center, Rt. 18/51	Good
D.10.1	Pheonix Glass Parking Lot, Monaca Penn Ave.	Fair
D.10.2	Intersection of Constitution Blvd. and Stobo Hill Rd	Poor
E.9.1	Intersection of Rt. 51 and Green Garden Road	Poor
E.11.1	Entrance to West Aliquippa, Constitution Blvd	Poor
E.10.1	Entrance to Aliquippa from Constitution Blvd	Poor
E.10.2	Franklin Ave. Aliquippa, Dairy Queen	Good
E.11.2	Ambridge-Aliquippa Bridge, Constitution Blvd	Poor
F.11.1	Philips Power Station Constitution Blvd	Poor
F.11.2	Intersection of Rt. 51 and Rt. 151	Poor
F.10.1	Intersection of Rt. 151 and Rt. 60 60 overpasses 151	Poor
H.11.1	Intersection of Rt. 30 with 04069 Rd	Poor
H.9.1	Raccoon Park Entrance Rt. 30	Poor
J.10.1	Intersection of Rts 18,168	Good
G.8.1	Steel Bridge on Rt. 151	Poor
H.6.1	2 miles east from 18 & 151 intersection or 2 miles west on Rt. 151 from G.8.1	Good
H.5.1	Intersection of Rt's 151 & 18	Good
H.6.2	Intersection of Routes 18 & 30	Fair
G.3.1	Superior Mobile Homes, Rt. 18	Good
J.4.1	Intersection of Rt's 30 & 151	Good
L.3.1	Main Intersection in Hookstown	Good
D.7.1	Entrance to Community College of Beaver County, Rt. 51	Good
E.7.1	KMART Shopping Center off of Rt. 51	Good
E.7.2	Center Exit of Rt. 60	Good
F.9.1	Bridge on Rt. 60, 1.6 miles from E.7.2 & F.10.1	Fair
E.8.1	Aliquippa Exit of Rt. 60	Fair
F.6.1	Penny Hollow Park Rd & Green Garden Rd	Good
F.4.1	Intersection of Green Garden Rd & Patterson Rd	Good
G.10.1	2nd Intersection past Booktown (off Rt. 151)	Poor

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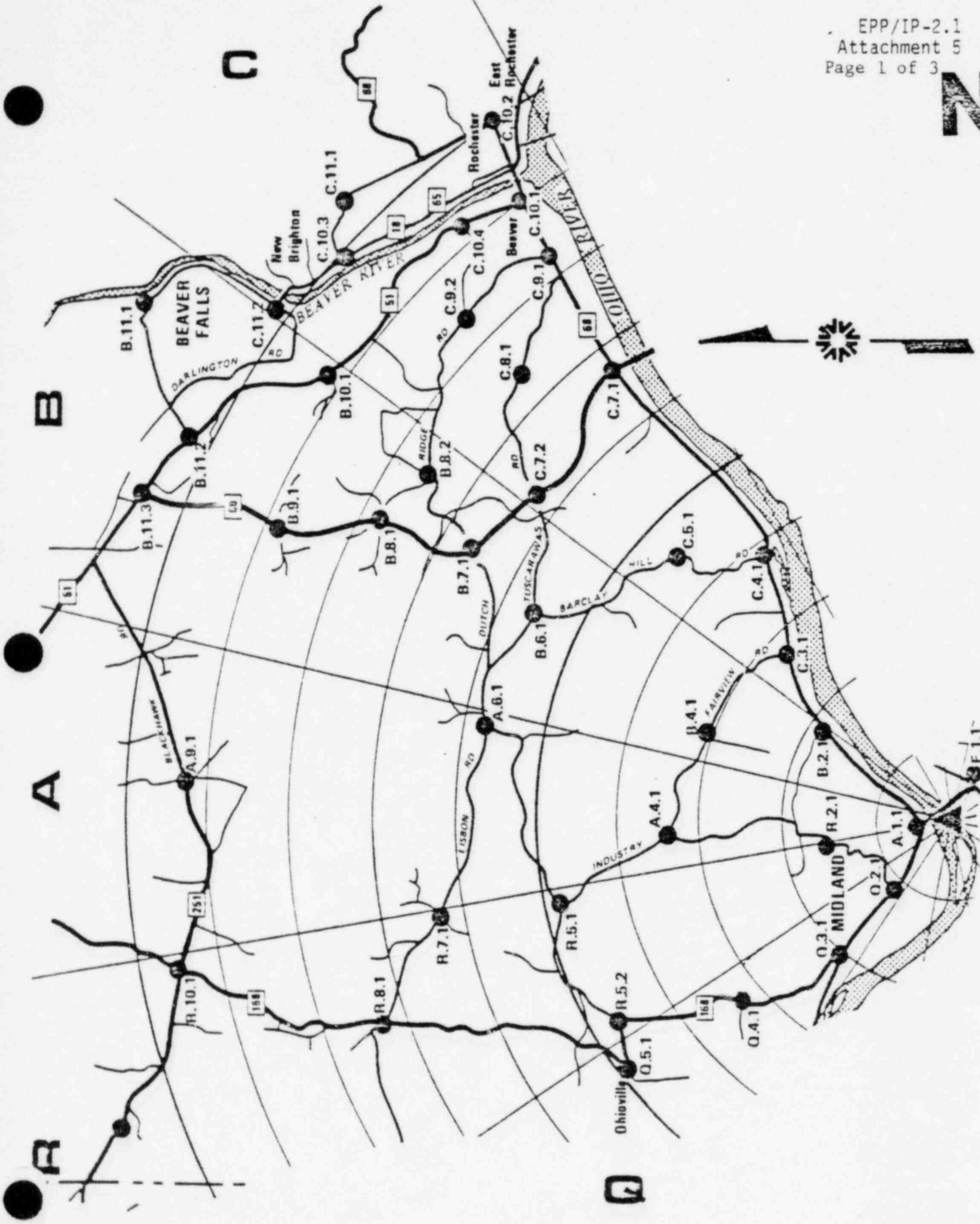
A
B
C
Q
R
BEAVER FALLS
New Brighton
Rochester
East Rochester
Beaver
Midland
Ohioville
BEAVER RIVER
OHIO RIVER
DARLINGTON RD
BLACKHAWK RD
RIDGE RD
DUTCH RD
TUSCARAWAS
BARCLAY HILL RD
FAIRVIEW RD
INDUSTRY
LISBON RD
A.1.1
A.4.1
A.8.1
A.9.1
B.2.1
B.4.1
B.6.1
B.7.1
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B.11.1
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B.11.3
C.3.1
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C.10.1
C.10.2
C.10.3
C.10.4
C.11.1
C.11.2
F.1.1
Q.2.1
Q.3.1
Q.4.1
Q.5.1
R.2.1
R.5.1
R.5.2
R.7.1
R.8.1
R.10.1
51
18
65
68
60
251
168

NORTHEAST 5 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 Bridge on the Midland side of Ohio River	Good
B.2.1	Red Brick Bldg on left side of Rt. 68 1.5m from A.1.1	Good
C.3.1	Intersection of Rt. 68 & Industry-Fairview Rd	Good
C.4.1	Intersection of Rt. 68 & Barclay Hill Rd	Good
C.5.1	Top of Hill from Rt. 68 on Barclay Hill Rd.	Good
B.6.1	Intersection of Barclay Hill Rd & Tuscarawus Rd	Good
A.6.1	Intersection of Lisbon Rd and Tuscarawas Rd	Good
R.5.1	Intersection of Industry-Fairview Rd & Tuscarawas Rd	Good
R.5.2	Intersection of Tuscarawas Rd & Rt. 168	Good
Q.4.1	Intersection on Rt. 168 1.7 miles from R.5.2	Good
Q.3.1	Intersection of Rt. 168 and Rt. 68	Good

NORTHEAST 10 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 Bridge on the Midland side of Ohio River	Good
B.2.1	Red Brick Bldg on left side of Rt. 68 1.5 miles from A.1.1	Good
C.3.1	Intersection of Rt. 68 & Industry-Fairview Rd	Good
C.4.1	Intersection of Rt. 68 and Barclay Hill Road	Good
C.7.1	Intersection of Rt. 68 & Rt. 60 Rt. 68 overpasses Rt. 60	Fair
C.9.1	Beaver County Courthouse, Rt.68	Fair
C.10.1	Intersection of Rt's 68 & 51, 68 overpasses 51	Fair
C.10.2	Huntsman Funeral Home at right angle bend in Rt. 68	Good
C.11.1	Three way intersection at bottom of Marion Hill	Fair
C.10.3	Intersection of Marion Hill Rd and Rt. 18/65, New Brighton	Poor
C.11.2	Harrow Ford across bridge over Beaver River Rt.18	Poor
B.11.1	Intersection of Rt's 18 & 588	Poor
B.11.3	Intersection of Rt's 60 & 51 (end of Rt. 60)	Poor
A.9.1	Blackhawk Public Golf Course, Rt. 251	Poor
R.10.1	Intersection of Rt's 251 & 168	Poor
R.8.1	Intersection of Lisbon Rd & Rt. 168	Good
Q.5.1	Ohioville Vol. Fire Dept. Rt. 168	Good
Q.4.1	Intersection on Rt.168 2.3m from Q.5.1	Good
Q.3.1	Intersection of Rt's 168 & 68, Midland	Good

NORTHEAST ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 Bridge on the Midland Side of Ohio River	Good
B.2.1	Red Brick Bldg. on left side of Rt. 68 1.5 miles from A.1.1	Good
C.3.1	Intersection of Rt. 68 and Fairview Road.	Good
C.4.1	Intersection of Rt. 68 and Barclay Hill	Good
C.7.1	Intersection of Rt. 68 & Rt. 60 overpasses Rt. 60	Fair
C.9.1	Beaver County Courthouse, Rt. 68	Fair
C.10.1	Intersection of Rt's 68 & 51 68 overpasses 51	Fair
C.10.2	Huntsman Funeral Home at right angle bend in Rt. 68	Good
C.10.3	Intersection of Marion Hill Rd. and Rt.18/65	Poor
C.11.2	Marrow Ford Across Bridge over Beaver River Rt.18	Poor
B.11.1	Intersection of Rt's 18 & 588	Poor
B.11.2	Intersection of Rt's 588 & 51	Poor
B.10.1	Top of Falston Hill Golf Course	Good
C.10.4	Intersection of Rt. 51 and Baner Hollow Rd.	Poor
C.8.1	Top of Hill on Tuscarawus Rd at Walington Estates	Good
C.7.2	Intersection of Tuscarawus Rd. and Rt. 60	Good
C.5.1	Top of Hill from Rt.68 on Barclay Hill Road	Good
B.6.1	Intersection of Barclay Hill Rd and Tuscarawas Rd.	Good
A.6.1	Intersection of Tuscarawas Road and Lisbon Rd.	Good
R.7.1	Intersection on Lisbon Rd 2.4 miles from B.6.2	Poor
R.8.1	Intersection of Lisbon Rd. & Rt. 168	Good
R.10.1	Intersection of Rt's 168 & 251	Poor
A.9.1	Blackhawk Public Golf Course Rt.251	Poor
Q.5.1	Ohioville Vol. Fire Dept. on Rt. 168	Good
Q.4.1	Intersection on Rt. 168 no landmark (2.3m from Q.5.1 or 1.7m from R.5.2)	Good
Q.3.1	Intersection of Rt's 168 & 68	Good
B.11.3	Intersection of Rt's 60 & 51	Poor
B.9.1	Bridge on Rt. 60 over Brady's Run County Park	Poor
B.7.1	Intersection of Dutch Ridge Rd and Rt. 60	Good
C.7.2	Intersection of Tuscarawus Rd and Rt. 60	Good
B.4.1	Western Beaver High School	Good
C.9.2	Beaver County Medical Center--Dutch Ridge Rd	Good
R.5.1	Intersection of Industry Fairview Rd & Tuscarawas Rd	Good
R.5.2	Intersection of Tuscarawas Rd and Rt. 168	Good

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LOCATION: (ONSITE) (OFFSITE)   SURVEY ROUTE: (NW) (SW) (NE) (SE)   DISTANCE: (5) (10) miles   DATE: ______

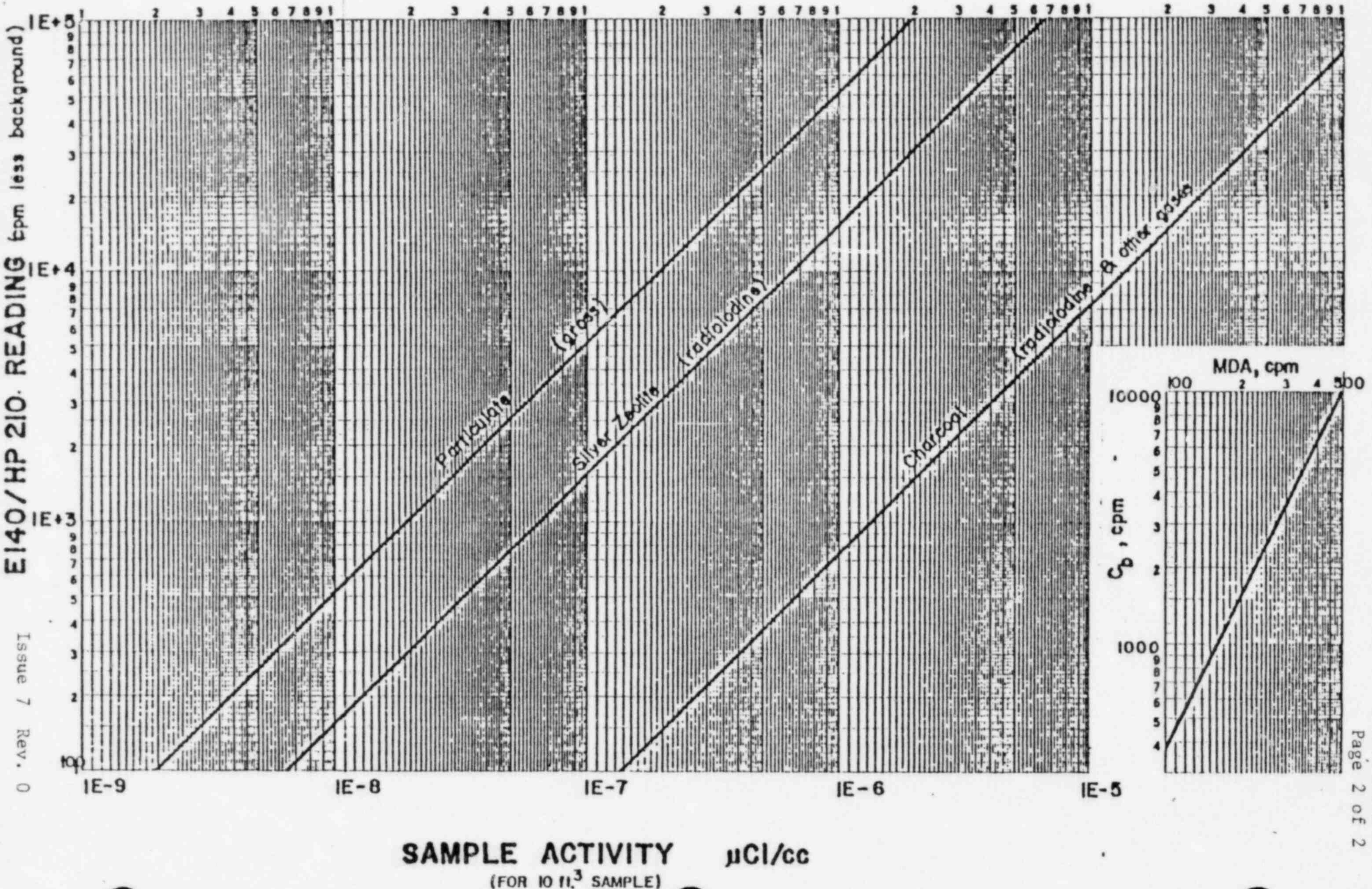
CALCULATIONS BY: ______   MONITORING TEAM LEADER: ______

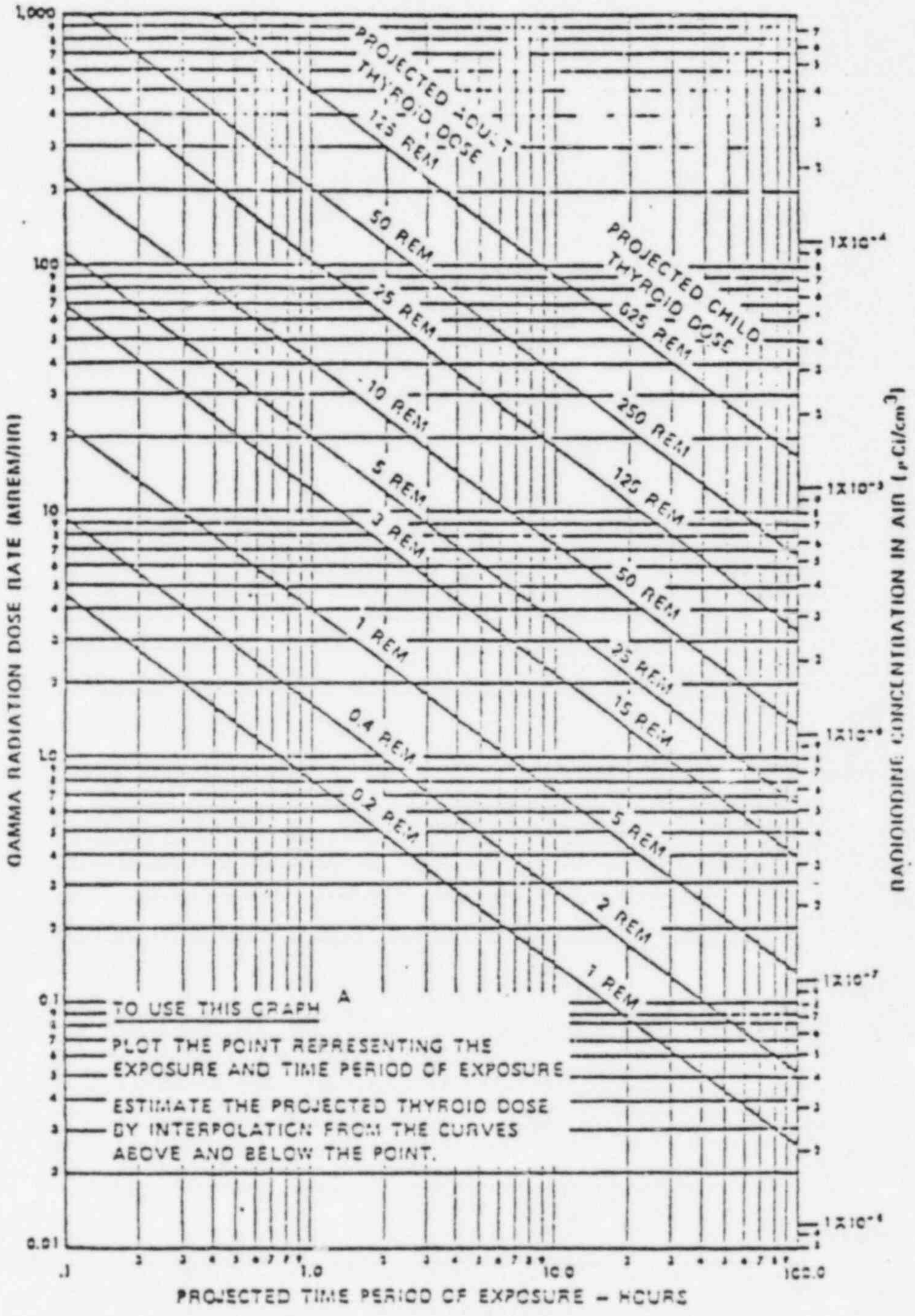
DOSE COMMITMENT FROM AIR SAMPLE DATA — E140/HP210 INSTRUMENT

a	b		c	d	e	f	g	h	i	j	k	l
Time	Survey Point	Closed Window mR/hr	Parameter	C_s (cpm)	C_b (cpm)	C_{net} (cpm)	Sample Volume (ft^3)	Conversion Factor	Conc. (μCi/cc)	Total Conc. (μCi/cc)	Conv. Factor	Total Dose* (mrem/hr)
			Air Filter					1.94 E-10			7.73 E5	
			Charcoal					1.35 E-8				
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10			7.73 E5	
			Charcoal					1.35 E-8				
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10			7.73 E5	
			Charcoal					1.35 E-8				
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10			7.73 E5	
			Charcoal					1.35 E-8				
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10			7.73 E5	
			Charcoal					1.35 E-8				
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10			7.73 E5	
			Charcoal					1.35 E-8				
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10			7.73 E5	
			Charcoal					1.35 E-8				
			AgZeolite					6.52 E-10				

*Dose = mrem per hour of inhalation of activity in column j

f = d - e
i = f x h/g (AgZ, charcoal based on I-131, Part. based on Cs-137)
l = j x k (based on I-131)


E140/HP 210 READING (cpm less background)
1E+5
1E+4
1E+3
100
1E-9
1E-8
1E-7
1E-6
1E-5
Particulate (gross)
Silver Zeolite (radioiodine)
Charcoal (radioiodine & other gases)
MDA, cpm
100
500
10000
1000
C_b, cpm
SAMPLE ACTIVITY µCi/cc
(FOR 10 ft.^{3} SAMPLE)



Using the reported closed window reading, determine the adult and child thyroid projected dose. Use the following input data:

- Projected Time of Exposure = 8 hours
- Gamma Radiation Dose Rate = gamma dose rate (mR/hr–closed window) for releases from Gas Decay Tanks, Volume Control Tanks, Degasifiers, Reactor Coolant System, etc.
- Gamma Radiation Dose Rate = Measured gamma dose rate (mR/hr—closed window) multiplied by 0.225 for releases via charcoal filters

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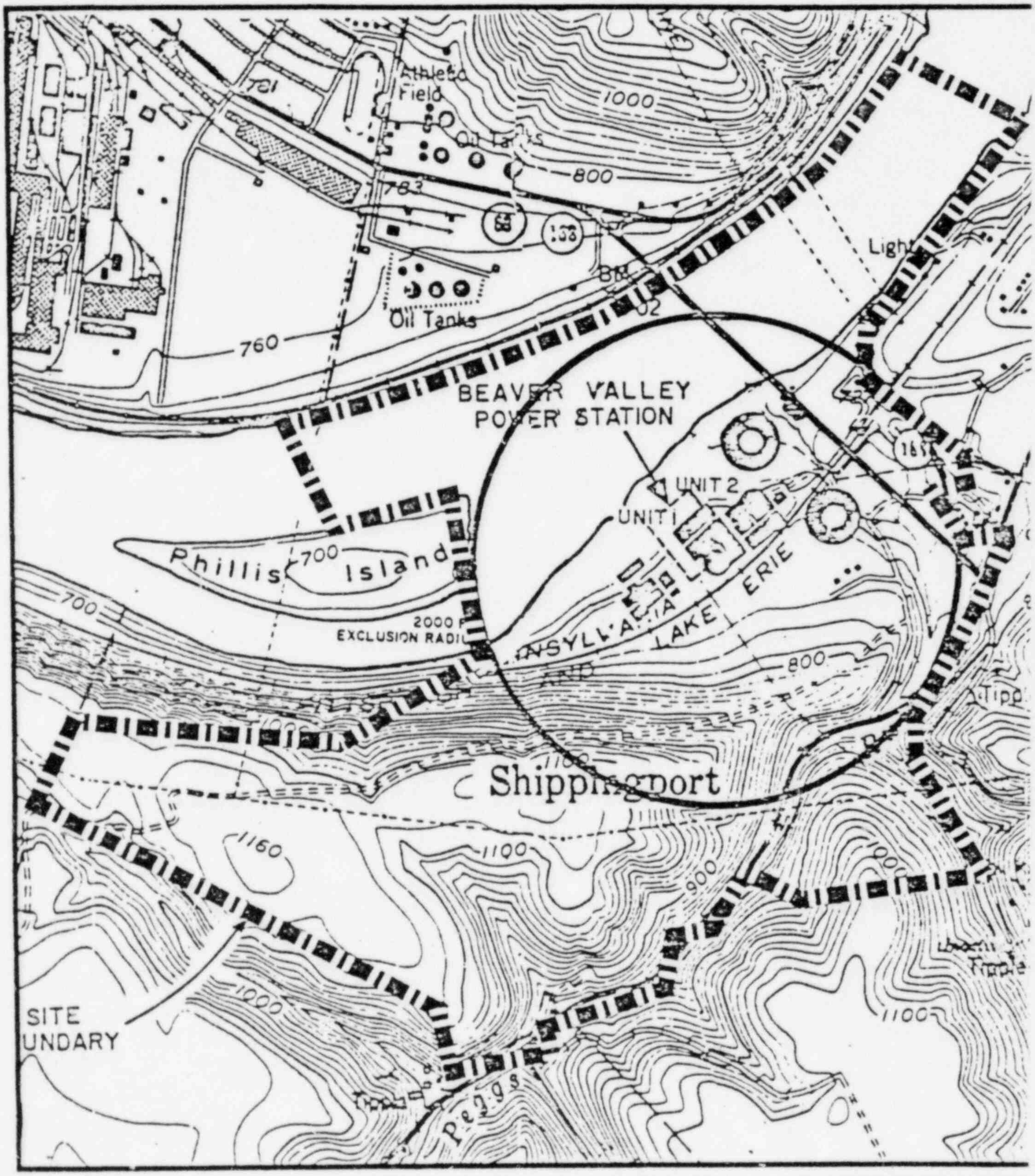

BVPS UNRESTRICTED AREA BOUNDARY FOR EFFLUENT RELEASES

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ONSITE MONITORING FOR AIRBORNE RELEASE

A. OBJECTIVE

This procedure provides instructions to monitoring team personnel for performing onsite radiological monitoring in the event of an airborne release of radioactive material. In-plant radiological surveys are performed in accordance with the RCM Chapter 3, and at the direction of the Radiological Control Coordiantor.

Onsite monitoring is directed and coordinated by the EA & DP Coordinator and/or the Emergency Director in accordance with EPP/IP-2.1, "Emergency Radiological Monitoring". The TSC/EOF personnel may direct that some or all of the surveys described herein be performed. Monitoring teams need only perform the applicable steps of this procedure.

B. PREREQUISITES/INITIAL CONDITIONS

1. An airborne release of radioactive material has occurred and the EA & DP Coordinator and/or the Emergency Director has requested an onsite survey.
2. TSC/EOF personnel have determined the general path of the plume and have provided monitoring team members with specific instructions on areas to survey, tapes of surveys, and requirements for protective clothing and respirators.
3. Appropriate monitoring equipment is available, operable and in-calibration.

C. PRECAUTIONS

1. Monitoring teams must remain alert to their own exposure and request relief if their cummulative exposure approaches a BVPS administrative control level. The Emergency Director is the only individual who may authorize exposure limit extensions in excess of 10 CFR 20.
2. Communications between the monitoring team and the TSC/EOF will normally be via DLC radio. Since radio communications at this frequency can be intercepted by commercially available scanners, all communications related to reporting survey data must be brief and factual, and free of exclamatory or alarming expressions.

3. Since implementation of proper protective actions onsite and offsite, and subsequent reconstruction of the event requires accurate information, observe the following guidelines:

   3.1 Carefully word data transmissions to the TSC/EOF to minimize possible confusion. In particular, avoid abbreviations (such as "mrem" which could be confused with "rem"). Use the complete word or unit--ie "millirem".

   3.2 Clearly identify survey locaitons, using predesignated survey location numbers, map coordinates, and equipment/building names, as available.

   3.3 Preface radio communications with the title or name of the receiving party and your title or name. For example: "Beaver Valley TSC, this is NW monitoring team.." Wait for the receiving party to acknowledge prior to relaying any data. End the message with an appropriate termiantion phrase. For example: "...SW monitoring team, out".

   3.4 Accurately document all survey data. Ensure that units associated with the data are clear. Enter the date, time, instrument serial number(s), and name of surveyor on all survey records.

D. PROCEDURE

1. Obtain appropriate monitoring equipment from the monitoring team kit(s) located in the storage locations. Equipment selected will depend on the type of survey assigned. Obtain and re-zero assigned dosimeters, if applicable.

2. Perform operability checks on monitoring equipment before leaving the Control Room or the controlled are hallway, in accordance with instrument use procedure provided in the Kit.

3. Obtain a Hi-band "Handie-Talkie" and check operation before leaving to start survey. Check radios outside of the Control Room to minimize possible RF interference with instrument. Keep the radio operational at all times while performing surveys in order to maintain communications with the TSC/EOF.

4. If the survey will be performed outside of the security fence, leave the station via the guardhouse. Retain your TLD and dosimeters while performing radiological monitoring onsite.

5. Obtain a DLC vehicle, if available. Otherwise, use any available privately-owned vehicle. Record starting mileage and gas tank level. Ensure that there is at least a 1/2 tank of gas. Obtain another vehicle if necessary.

NOTE

The DC powered air-samplers require a 12-VDC source to operate. The battery in a car is suitable. For this reason, a vehicle may be necessary, even though the distances involved are within walking distance.

6. If TSC/EOF personnel so direct, or if airborne activity or contamination is suspected, don protective clothing and/or respirators, as appropriate. Avoid the unnecessary use of respirators and protective clothing. If observed dose rates exceed 100 millirem per hour, evacuate the area and/or seek shelter, unless otherwise directed by TSC/EOF personnel.

7. Perform measurements as assigned by the TSC/EOF as follows:

NOTE

Whenever possible, an ion-chamber instrument (such as the Eberline RO- series) should be used for making dose rate measurements. An instrument with an energy-compensated GM probe with the beta window closed (such as HP-270) is an acceptable substitute.

During an Unusual Event, monitoring team data shall be reported to the EA and DP Coordinator in the Control Room. For higher emergencies the TSC will be activated and data shall be reported to the EA & DP Coordinator in the TSC/EOF.

7.1 Moving Dose Rate

7.1.1 While enroute to the first assigned survey locaiton, and at any other time while moving about the site, have the survey instrument turned on. Frequently observe the survey meter and report readings to the TSC/EOF. If a level of 1.0 millirem per hour or greater is observed, immediately notify the TSC/EOF. Note and record any readings significantly higher than the average and record these readings on the site map (Attachment 2). If in a vehicle, extend the instrument probe through an open window (weather permitting).

7.2 Stationary Dose Rate Survey

7.2.1 Hold the instrument probe parallel to and about 3 feet (waist height) above the ground.

7.2.2 Take a reading. Allow sufficient time for the meter response to stablize. Document the reading, in mR/hr on the EPP Survey Log (Attachment 1).

7.3 Airborne Activity

7.3.1 Place a clean particulate filter and charcoal cartridge (or silver zeolite cartridge as directed by TSC/EOF) in the air sampler. The filters are positioned so as the air flow passes through the particulate paper filter first.

NOTE

TSC/EOF personnel will determine which iodine sampling cartridge is appropriate. TSC/EOF personnel may also change the sample volume from 10 ft^3 to another volume consistent with radiological conditions.

7.3.2 Note the flow rate (cfm). On the DC powered samplers, this is normally 1.0 ft^3/min. Calculate the time necessary to obtain a 10 ft^3 sample.

$$\text{Sample Time, minutes} = \frac{10\ ft^3}{\text{Sampler Flow Rate, cfm}}$$

7.3.3 Position or hold the sampler such that the intake is not touching nor in close proximity to potentially contaminated surfaces. Connect the sampler to the power supply, or for 12 VDC samplers, to the battery of the vehicle. Keep the engine running when drawing power from the vehicle battery.

7.3.4 Turn the sampler on and record the time on the Air Sample Record Card (Attachment 3).

7.3.5 When approximately 10 ft^3 have been collected, turn the sampler off and record the time on the Air Sample Record Card.

7.3.6 Remove the filters from the sampler.

7.3.7 Count each filter separately, using an E140, or equivalent, with HP210 probe. Place the filter on a clean surface and postion the HP210 probe about one-half centimeter from the filter.

NOTE

Ensure that the RESPONSE control on the E140, or equivalent, is set for the slowest response. This is necessary to maintain an adequate minimum detectable activity (MDA). The MDA for typic typical background are listed below. If the background is higher than that listed below relocate to another location with a lower background. If laboratory-type instruments (such as SAM-2 are available, these instruments may be used to access the sample in accordance with the BVPS RCM.

Background (cpm)	MDA (cpm)	Background (cpm)	MDA (cpm)
200	70	3000	275
500	110	5000	360
1000	160	10000	500
1500	195	20000	710
2000	225	30000	870

7.3.8 Record the gross count rate readings, location, and time on the EPP Survey Form.

7.3.9 Report any radioiodine sample which exceeds 100 cpm above background.

7.3.10 Place the samples in a plastic bag with the Air Sample Record Card. At the end of the survey return all samples, and EPP Survey Logs to the Station, or to another locaiton designated by the TSC/EOF, for laboratory counting.

8. After all the required data have been collected at the first survey location, establish radio contact with the TSC/EOF and report the following data from the log sheet:

   8.1 Survey Location and time

   8.2 Air sample volume

   8.3 Rate meter background count rate

   8.4 Rate meter gross counts for particulate sample

   8.5 Rate meter gross counts for radioiodine cartridge & type of cartridge used.

   8.6 Radiation readings taken between survey points.

9. Proceed to the next survey point and repeat steps 7 and 8 for each survey location.

10. Periodically, read your pcket dosimeters, and have other personnel in the monitoring team read theirs. Report these readings to the TSC/EOF at least every 30 minutes, or when accumulated exposure reaches 100 mrem.

11. After reporting the survey data from the last survey point, request further instructions from the TSC/EOF.

E. REFERENCES

1. Beaver Valley Power Station Emergency Implementing Procedure EPP/IP-2.1, "Emergency Radiological Monitoring"

2. Beaver Valley Power Station Radiation Control Manual

F. ATTACHMENTS

1. EPP Survey Log

2. BVPS Site Map

3. Air Sample Record Card

LOCATION: (ONSITE) (OFFSITE) SURVEY ROUTE: (NW) (SW) (NE) (SE) DISTANCE: (5) (10) miles DATE: ____________

VEHICLE LICENSE # ____________ MILEAGE AT START: ____________ MILEAGE AT END: ____________ GAS TANK LEVEL: ____________

INSTRUMENT SERIAL #: B-G: ________ E140: ________ Air Sampler: ________ MONITORING TEAM LEADER: ____________

Survey Point	TIME	Closed Window mR/hr	A.S. VOL. Ft^3	AIR SAMPLE E140 READINGS Background cpm	Particulate Gross cpm	Iodine Gross cpm	TYPE Cart.*	COMMENT
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
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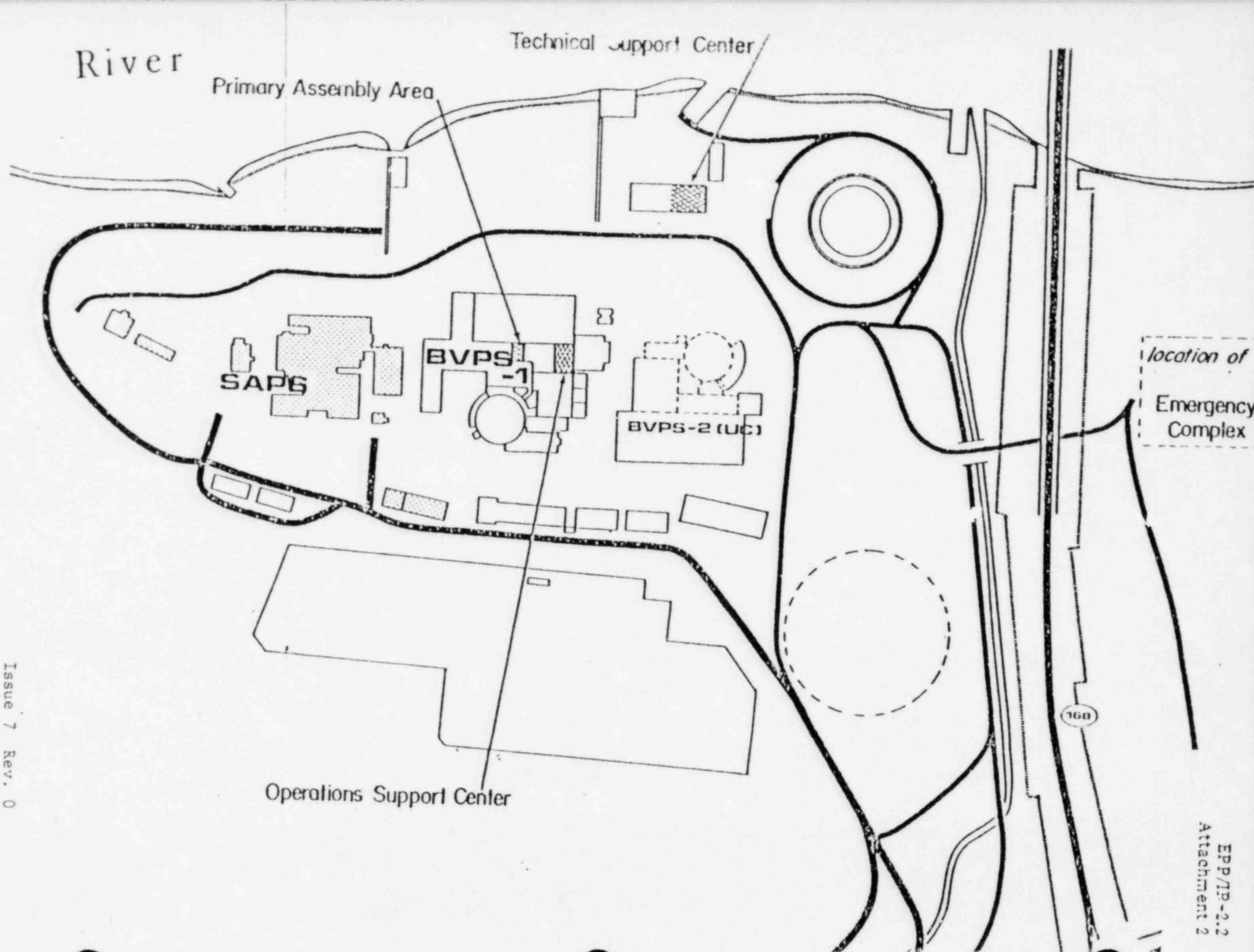
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	

Silver Zeolite/Charcoal

EPP/IP-2.2
Attachment 2



AIR SAMPLE RECORD CARD

Air sample location: ______________________________

Date: _______________ Surveyer: ____________________

Sampler ID # ______________________________________

Sampler flow rate ft^3/min _______________

Sample time: (10 ft^3/Sampler flow rate) = _________

Sample start time: _________ Stop time: ___________

Sample volume: ______________

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OFFSITE MONITORING FOR AIRBORNE RELEASE

A. OBJECTIVE

This procedure provides instructions to monitoring team personnel for performing offsite radiological monitoring in the event of an airborne release of radioactive material. Offsite monitoring is directed and coordinated by the EA & DP Coordinator and/or the Emergency Director in accordance with EPP/IP-2.1, "Emergency Radiological Monitoring". EA & DP personnel may direct that some or all of the surveys described herein be performed. Monitoring teams need only perform the applicable steps of this procedure.

B. PREREQUISITES/INITIAL CONDITIONS

1. An airborne release of radioactive material has occurred and the EA & DP Coordinator and/or the Emergency Director has requested an offsite survey.
2. TSC/EOF personnel have determined the general path of the plume and have provided monitoring team members with specific instructions on areas to survey, tapes of surveys, and requirments for protective clothing and respirators.
3. Appropriate monitoring equipment is available, operable, and in-calibration.

C. PRECAUTIONS

1. Monitoring teams must remain alert to their own exposure and request relief if their cummulative exposure approaches a BVPS administrative control level. The Radiological Controls Coordiantor may authorize exposure limit extension above administrative limits, but not greater than 10 CFR 20. The Emergency Director may authorize exposure limit extensions in excess of 10 CFR 20.
2. Communications between the monitoring team and the TSC/EOF will normally be via DLC radio. Since radio communications at this frequency can be intercepted by commercially available scanners, all communications related to reporting survey data must be brief and factual, and free of exclamatory or alarming expressions. To the extent possible, survey points should be referenced by map designator (NW survey point #3) rather than the actual location.

3. Monitoring team personnel shall not supply raw data to members of the general public or to news media personnel. Monitoring team personnel should courteously explain that the survey is a precautionary measure, that the survey data is raw data that hasn't been evaluated, and that significant final data is reported to State and Local Authorities. Refer all questions to DLC PID or to PEMA/BCEMA/CCDSA/HCOES.

4. Since implementation of proper protective actions onsite and offsite, and subsequent reconstruction of the event requires accurate information, observe the following guidelines:

   4.1 Carefully word data transmissions to the TSC/EOF to minimize possible confusion. In particular, avoid abbreviations (such as "mrem" which could be confused with "rem"). Use the complete word or unit--ie "millirem".

   4.2 Clearly identify survey locations, using predesignated survey locaiton numbers and map coordinates. as available.

   4.3 Preface radio communicati . the title or name of the receiving party and your title or name. For example: "Beaver Valley TSC, this is NW monitoring team..." Wait for the receiving party to acknowledge prior to relaying any data. End the message with an appropriate termination phrase. For example: "...SW monitoring team, out".

   4.4 Accurately document all survey data. Ensure that units associated with the data are clear. Enter the dat, time, instrument serial number(s), and name of surveyor on all survey records.

D. PROCEDURE

1. Obtain appropriate monitiring equipment from the monitoring team kit(s) located in the designated storage area. Equipment selected will depend on the type of survey assigned. Obtain and re-zero assigned dosimeters, if applicable.

2. Perform operability checks on monitoring equipment before leaving the Control Room or the controlled area hallway (or the BC Communications Center), in accordance with instrument use procedures provided in the kit.

3. Obtain a Hi-band "Handie-Talkie" and check operation before leaving the Station (or the BC Communicaitons Center). Keep the radio operational at all times while performing surveys in order to maintain communications with the TSC/EOF.

4. Prior to leaving the Station, ensure that you have necessary equipment, survey maps, etc and understand the survey assignment. Leave the station via the guardhouse. Retain your TLD and dosimeters while peforming radiological monitoring offsite.

5. Obtain a DLC vehicle, if available. Otherwise, use any available privately-owned vehicle. Record starting mileage and gas tank level. Ensure that there is at least a 1/2 tank of gas. Obtain another vehicle if necessary.

6. If TSC/EOF personnel so direct, or if significant airborne activity or contamination is observed, don protective clothing and/or respirators, as appropriate. If observed dose rates exceed 100 millirem per hour, evacuate the area and/or seek shelter, unless otherwise directed by EA & DP personnel.

NOTE

To prevent unwarranted public concern, do not don protective clothing or respirators offsite unless necessary, and at the direction of the TSC/EOF.

7. Perform measurements as assigned by the TSC/EOF as follows:

NOTE

Whenever possible, an ion-chamber instrument (such as the Eberline RO-series) should be used for making dose rate measurements. An instrument with an energy- compensated GM probe with the beta window closed (E530/HP270) is an acceptable substitute.

NOTE

For Site Area or General Emergencies, radiological monitoring will be controlled from the Emergency Operations Facility (EOF) and survey data should be reported to the EOF. For lesser emergencies, report data to the Technical Support Center (or Control Room).

7.1 Moving Dose Rate

7.1.1 While enroute to the first assigned survey location, and at any other time while moving about offsite, have the survey instrument turned on, and the probe extended outside of the vehicle window, if weather permits. Read the survey meter and report any readings significantly higher than the average to the TSC/EOF, and record these readings on the survey map. If a level of of 1.0 millirem per hour or greater is observed, immediately notify the TSC/EOF.

7.1.2 If significant readings are noted at locaitons other than those assigned, request concurrence of TSC/EOF to stop at that location and obtain stationary survey data.

7.2 Stationary Dose Rate Survey

7.2.1 Hold the GM probe parallel to and about 3 feet (waist height) above the ground.

7.2.2 Take a reading. Allow sufficient time for the meter response to stablize. Document the reading, in mR/hr on the EPP Survey Log (Attachment 1).

7.3 Airborne Activity

7.3.1 Place a clean particulate filter and a charcoal cartridge (or silver zeolite cartridge as directed by TSC/EOF) in the air sampler. The filters are positoined so as the air flow passes through the particulate paper filter first.

NOTE

EA & DP personnel will determine which iodine sampling cartridge is appropriate. EA & DP personnel may also change the sample volume from 10 ft^3 to another volume consistent with radiological conditions.

7.3.2 Note the flow rate (cfm). On the DC powered samplers, this is normally 1.0 ft^3. Calculate the time necessary to obtain a 10 ft^3 sample.

Sample Time, minutes = $\frac{\qquad}{\text{Sampler Flow Rate, cfm}}$

7.3.3 Position or hold the sampler such that the intake is not touching nor in close proximity to potentially contaminated surfaces. Connect the sampler to the power supply, or for 12 VCD samplers, to the battery of the vehicle. Keep the engine running when drawing power from the vehicle battery.

7.3.4 Turn the sampler on and record the time on the Air Sample Record Card (Attachment 6).

7.3.5 When approximately 10 ft^3 have been collected, turn the sampler off and record the time on the Air Sample Record Card.

7.3.6 Remove the filters from the sampler.

7.3.7 Count each filter separately, using an E140 with HP210 probe. Place the filter on a clean surface and position the HP210 probe about one-half centimeter from the filter.

NOTE

Ensure that the RESPONSE control on the E140 is set for the slowest response. This is necessary to maintain an adequate minimum detectable activity (MDA). The MDA for typical backgrounds are listed below. If the background is higher than that listed below, move to another location with a lower background. If laboratory-type instruments (such as SAM-2), are available, these instruments may be used to assess the samples in accordance with the BVPS RCM.

Background (cpm)	MDA (cpm)	Background (cpm)	MDA (cpm)
200	70	3000	275
500	110	5000	360
1000	160	10000	500
1500	195	20000	710
2000	225	30000	870

7.3.8 Record readings, location, and time on the EPP Survey Form.

7.3.9 Report any radioiodine sample which exceeds 100 cpm above background.

7.3.10 Place the samples in a plastic bag with the Air Sample Record Card. At the end of the survey return all samples and EPP Survey Logs/maps to the Station, or to another location designated by the TSC/EOF, for laboratory counting.

7.4 Alternate Radioiodine Determination

NOTE

In the event iodine sampling by other means is not feasible, a convervative estimate may be made from the measured gamma dose rate. EA & DP personnel will decide if this method is appropriate and direct monitoring teams appropriately. Perform this section, only if directed.

7.4.1 Close the beta shield on the hand probe.

7.4.2 Hold the GM probe parallel to and about 3 feet (waist height) above the ground.

7.4.3 Take a reading. Allow sufficient time for the meter response to stabilize. Document this reading in the block labeled "Closed Window", and report the reading to the TSC/EOF along with the other data.

7.4.4 EA & DP personnel will convert the observed dose rate to projected whole body and thyroid doses using Attachment 7 of EPP/IP-2.1, "Emergency Radiological Monitoring".

7.4.5 When reporting the results of this determination, ensure that EA & DP personnel are aware that the alternate method was used.

8. After all of the required data have been collected at the first survey location, establish radio contact with the TSC/EOF and report the following data:

8.1 Survey location and time

8.2 Air sample volume

8.3 Rate Meter background count rate

8.4 Rate Meter gross counts for particulate sample

8.5 Rate Meter gross counts for radioiodine cartridge (Identify if silver zeolite

8.6 Radiation readings taken between survey points.

NOTE

If contact cannot be made with the TSC/EOF by radio,use the nearest telephone enroute to the next survey point to report the data (TSC 412-643-5507 EOF 412-643-5502 CR 412-643-8000).

9. Proceed to the next survey point and repeat steps 7 and 8 for each survey location.

10. Periodically, read your pocket dosimeters, and have other personnel in the monitoring team read theirs. Report these readings to the TSC/EOF at least every 30 minutes, or when accumulated exposure reaches 100 mrem.

11. After reporting the survey data from the last survey point, request further instructions from the TSC/EOF. Prior to returning to Station, ensure that all documentation is complete.

E. REFERENCES

1. Beaver Valley Power Station Emergency Implementing Procedure EPP/IP-2.1, "Emergency Radilogical Monitoring"

2. Beaver Valley Power Station Radiation Control Manual

F. ATTACHMENTS

1. EPP Survey Log

2. NW Offsite Survey Map

3. SW Offsite Survey Map

4. SE Offsite Survey Map

5. NE Offsite Survey Map

6. Air Sample Record Card

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LOCATION: (ONSITE) (OFFSITE) SURVEY ROUTE: (NW) (SW) (NE) (SE) DISTANCE: (5) (10) miles DATE: ____________

VEHICLE LICENSE # ____________ MILEAGE AT START: ____________ MILEAGE AT END: ____________ GAS TANK LEVEL: ____________

INSTRUMENT SERIAL #: B-G: ____________ E140: ____________ Air Sampler: ____________ MONITORING TEAM LEADER: ____________

Survey Point	TIME	Closed Window mR/hr	A.S. VOL. Ft^3	AIR SAMPLE E140 READINGS Background cpm	Particulate Gross cpm	Iodine Gross cpm	TYPE Cart.	COMMENT
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
							SZ/C	
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							SZ/C	
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							SZ/C	
							SZ/C	

Silver Zeolite/Charcoal

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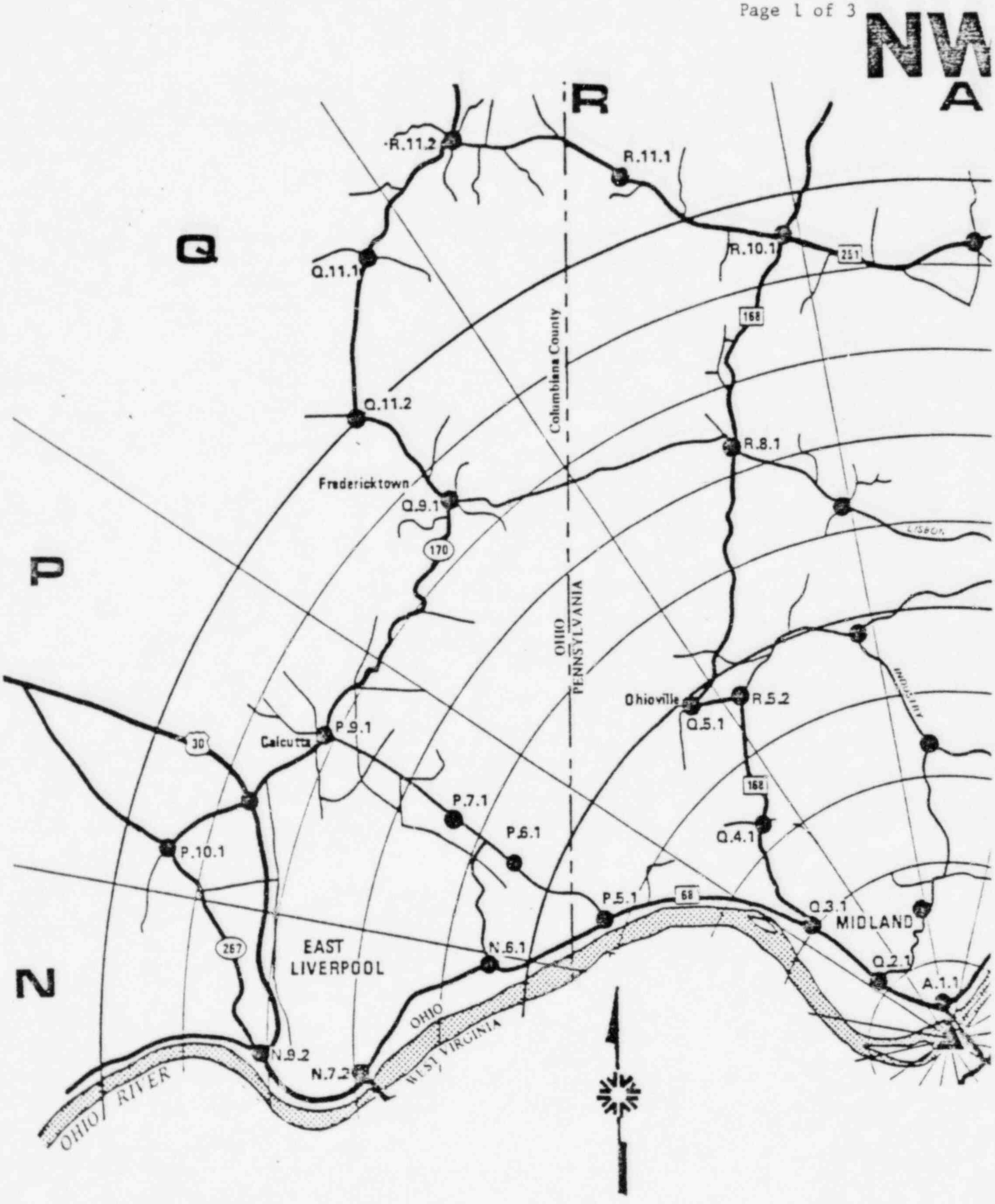
NW
R
A
Q
P
N
R.11.2
R.11.1
R.10.1
251
Q.11.1
168
Columbiana County
Q.11.2
R.8.1
Fredericktown
Q.9.1
LISBON
170
OHIO
PENNSYLVANIA
Ohioville
R.5.2
Q.5.1
INDUSTRY
P.9.1
Calcutta
30
168
P.7.1
P.6.1
P.10.1
Q.4.1
P.5.1
68
Q.3.1
MIDLAND
EAST
LIVERPOOL
N.6.1
267
Q.2.1
A.1.1
OHIO
WEST VIRGINIA
N.9.2
N.7.2
OHIO RIVER

NORTHWEST 5 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
Q.3.1	Intersection of Rt's 168 & 68	Good
P.5.1	Intersection of Rt. 68 and Calcutta-Smith Ferry Rd	Good
P.6.1	Top of Hill Calcutta-Smith Ferry Rd	Good
N.6.1	Intersection of Fisher Rd & Ohio Rt. 39	Poor

NORTHWEST 10 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 bridge on the Midland side of Ohio River	Good
Q.3.1	Intersection of Rt. 168 & 68	Good
Q.4.1	Entrance to Meadowbrook Estates	Good
Q.5.1	Ohioville Vol. Fire Dept. off Rt.168	Good
R.8.1	Intersection of Rt. 168 & Lisbon Rd	Good
R.10.1	Intersection of Rt's 251 & 168	Poor
R.11.1	Intersection of Rt. 251 & State Gamelands Rd	Poor
R.11.2	Intersection of Rt's 170 & 251	Poor
Q.11.1	Intersection of Rt. 170 & Clarkson Pancake Rd	Fair
Q.11.2	Intersection of Rt. 170 & Entr. to Beaver Creek State Park	Good
Q.9.1	Intersection of Rt. 170 & Fredrickstown Rd	Poor
P.9.1	Intersection of Rt. 170 & Calcutta-Smith Ferry Rd	Poor
P.10.1	Intersection of Rt. 267 & T928 (Irish-Ridge Rd)	Poor
N.9.2	Intersection of Rt's 267 & 39/7 (School)	Poor
N.7.2	Emergency stopping area before Ohio/W.Va. bridge Rt.30	Good
P.5.1	Intersection of Rt. 68 & Calcutta-Smith Ferry Rd	Good

NORTHWEST ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 bridge on the Midland side of Ohio River	Good
Q.3.1	Intersection of Rt. 168 & 68	Good
Q.4.1	Entrance to Meadowbrook Estates, Rte. 168	Good
R.5.2	Intersection of Tuscarawas Rd. and Rte. 168	Good
Q.5.1	Ohioville Vol. Fire Dept. off Rt.168	Good
R.8.1	Intersection of Rt. 168 & Lisbon Rd	Good
R.10.1	Intersection of Rt's 251 & 168	Poor
R.11.1	Intersection of Rt. 251 & State Gamelands Rd	Poor
R.11.2	Intersection of Rt's 170 & 251	Poor
Q.11.1	Intersection of Rt. 170 & Clarkson Pancake Rd	Fair
Q.11.2	Intersection of Rt. 170 & Entr. to Beaver Creek State Park	Good
Q.9.1	Intersection of Rt. 170 & Fredrickstown Rd	Poor
P.9.1	Intersection of Rt. 170 & Calcutta-Smith Ferry Rd	Poor
P.10.1	Intersection of Rt. 267 & T928 (Irish-Ridge Rd)	Poor
N.9.2	Intersection of Rt's 267 & 39/7 (School)	Poor
N.7.2	Emergency stopping area before Ohio/W.Va. bridge Rt.30	Good
P.5.1	Intersection of Rt. 68 & Calcutta-Smith Ferry Rd	Good
P.6.1	Top of hill Calcutta-Smith Ferry Rd	Good
P.7.1	Calcutta Church (Calcutta-Smith Ferry Rd)	Good

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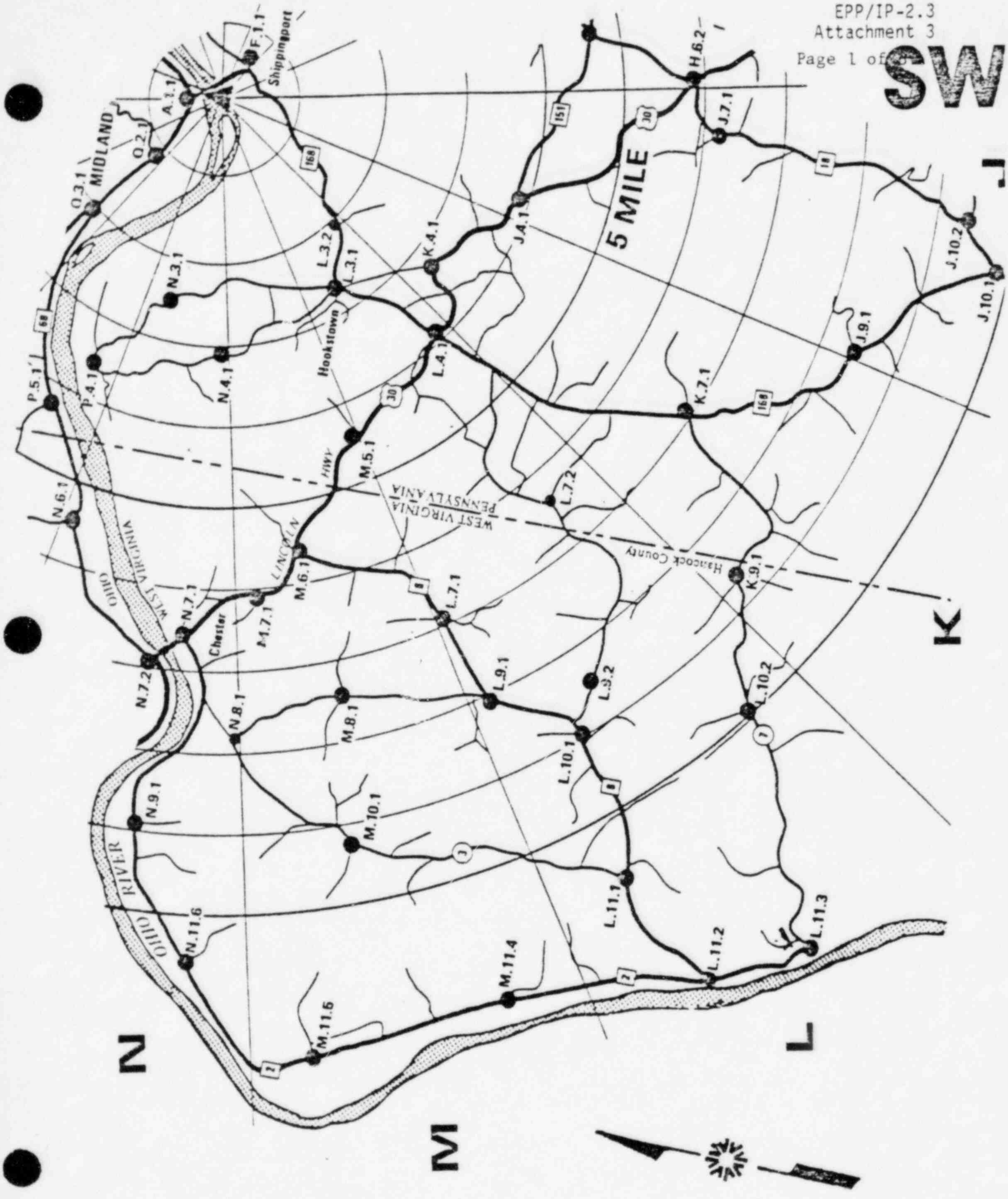
SW
5 MILE
J
K
L
M
N
MIDLAND
Shippingport
Hookstown
Chester
WEST VIRGINIA
PENNSYLVANIA
Hancock County
OHIO
WEST VIRGINIA
OHIO RIVER
OHIO
A.1.1
F.1.1
H.6.2
J.7.1
O.2.1
O.3.1
L.3.2
L.3.1
N.3.1
K.4.1
J.4.1
J.10.2
J.10.1
J.9.1
K.7.1
L.4.1
N.4.1
P.4.1
P.5.1
M.5.1
L.7.2
N.6.1
M.6.1
L.7.1
K.9.1
M.7.1
N.7.1
N.7.2
L.9.1
L.9.2
N.8.1
M.8.1
L.10.1
L.10.2
N.9.1
M.10.1
L.11.1
L.11.3
N.11.6
L.11.2
M.11.4
M.11.6
151
30
168
18
68
8
7
3
2

SOUTHWEST 5 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
L.3.1	Major Intersection in Hookstown	Good
L.4.1	Intersection of Rt. 168 & Rt. 30	Good
J.4.1	Intersection of Rt. 30 & Rt. 151	Good
H.5.1	Intersection of Rt. 151 & Rt. 18	Good
H.6.2	Intersection of Rt. 18 & Rt. 30	Good
M.5.1	West on Rt. 30 1.2 miles Past L.4.1 or East on Rt. 30 1.2 miles Past M.6.1	Good
M.6.1	Intersection of Rt. 30 & Rt. 8	Good
N.7.1	West Virginia-Ohio Bridge, Rt. 30	Good
N.6.1	Intersection of Rt. 39 & Fisher Road, Winkys	Good
O.2.1	Entrance to Crucible Steel, Rt. 68 Midland	Good
A.1.1	Midland Side of Rt. 168 Bridge	Good

SOUTHWEST 10 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
L.3.1	Major Intersection in Hookstown	Good
L.4.1	Intersection of Rt. 168 and Rt. 30	Good
J.4.1	Intersection of Rt. 30 & Rt. 151	Good
H.5.1	Intersection of Rt. 151 & Rt. 18	Good
H.6.2	Intersection of Rt. 18 & Rt. 30	Good
J.10.1	Intersection of Rt. 18 & Rt. 168	Good
J.9.1	Entrance to Youth Forestry Camp	Good
K.7.1	Intersection of Hanover Road & Rt. 18 2.7 mile from J.9.1 or 3.3 mile from L.4.1	Good
K.9.1	Intersection of Rt. 7 & Rt. 24	Poor
L.10.2	Intersection of Rt. 7 & Rt. 26, Sewage Lift Station	Poor
L.11.3	Intersection of Rt. 2 & Rt. 7, Substation	Poor
L.11.2	Intersection of Rt. 2 & Rt. 8	Poor
M.11.4	Bridge of Tomlinson Lake, Rt. 2	Poor
M.11.5	Intersection of Rt. 2 & Rt. 208	Poor
N.11.6	Intersection of Rt. 2 & Rt. 3/6, R.R. Crossing	Poor
N.9.1	Intersection of Rt. 2 & Rt. 1, Value King	Fair
N.7.1	West Virginia-Ohio Bridge, Rt. 30	Good
N.6.1	Intersection of Rt. 39 & Fisher Road, Winkys	Good
O.2.1	Entrance to Crucible Steel, Rt. 68 Midland	Good
A.1.1	Midland Side of Rt. 168 Bridge over Ohio	Good
L.4.1	Intersection of Rt. 168 & Rt. 30	Good

SOUTHWEST ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
L.3.1	Major Intersection in Hookstown	Good
L.4.1	Intersection of Rt. 168 & 30	Good
J.4.1	Intersection of Rt. 30 & Rt. 151	Good
H.5.1	Intersection of Rt. 151 & 18	Good
H.6.2	Intersection of Rt. 18 & Rt. 30	Good
J.10.1	Intersection of Rt. 18 & Rt. 168	Good
J.9.1	Entrance to Youth Forestry Camp	Good
K.7.1	Intersection of Hanover Road & Rt. 18, 2.7 mile from J.9.1, 3.3 mile from L.4.1	Good
M.5.1	West on Rt. 30 1.2 miles Past L.4.1 or East on Rt. 30 1.2 miles Past M.6.1	Good
M.6.1	Intersection of Rt. 30 & Rt. 8	Good
N.7.1	West Virginia - Ohio Bridge, Rt. 30	Good
A.1.1	Midland Side of Rt. 168 Bridge	Good
Q.2.1	Entrance to Crucible Steel, Rt. 68/168	Good
N.6.1	Intersection of Rt. 39 & Fisher Rd, Winkys	Good
N.4.1	Second Bridge Past Hookstown Intersection	Poor
P.4.1	Dravo, Keystone Division	Fair
N.3.1	Top of Hill Next to DLCO Radio Tower	Good
L.7.1	Intersection of Rt. 8 & Rt. 14	Good
L.9.1	Intersection of Rt. 8 & Rt. 5	Good
L.10.1	Tomlinson Run State Park Entrance, Rt. 8	Fair
L.11.1	Intersection of Rt. 8 & Rt. 3	Fair
L.9.2	Oak Glen High School, Rt. 33	Fair
L.7.2	Intersection of Rt. 33 & Rt. 14/2	Good
N.9.1	Intersection of Rt. 2 and Rt. 1, Value King	Fair
N.11.6	Intersection of Rt. 2 & Rt. 3/6, RR Crossing	Poor
M.11.5	Intersection of Rt. 2 & Rt. 208	Poor
M.11.4	Bridge Over Tomlinson Lake, Rt. 2	Poor
L.11.2	Intersection of Rt. 2 & Rt. 8	Poor
L.11.3	Intersection of Rt. 2 & Rt. 7, Substation	Poor
L.10.2	Intersection of Rt. 7 & Rt. 26, Sewage Lift Station	Poor
K.9.1	Intersection of Rt. 7 & Rt. 24	Poor
M.10.1	Intersection of Rt. 3 & Rt. 208	Poor
N.8.1	Intersection of Rt. 3/2 & Rt. 5	Poor
M.8.1	Intersection of Rt. 5 & Rt. 208	?

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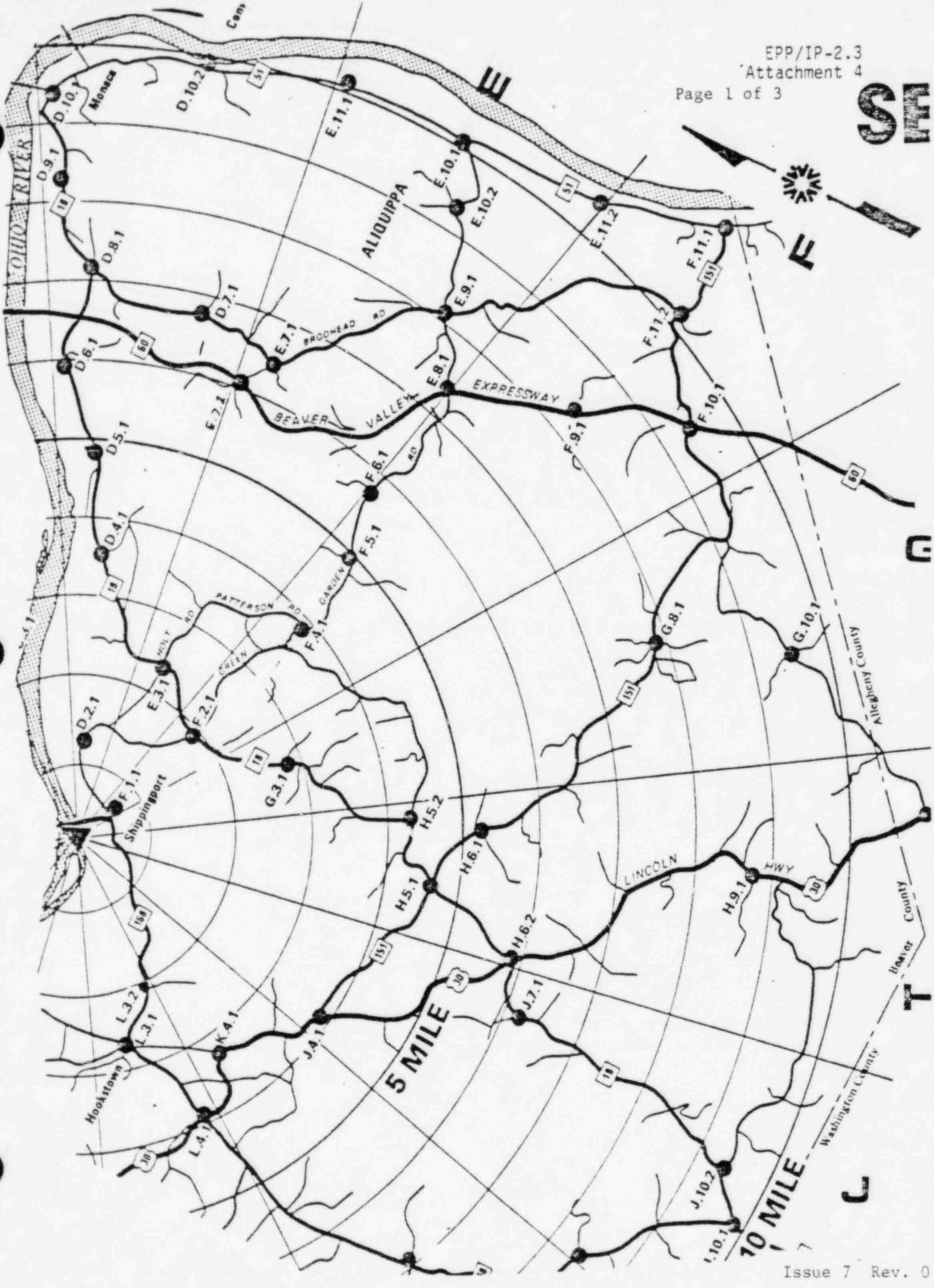
SE
E
F
G
H
J
OHIO RIVER
Monaca
ALIQUIPPA
Shippingport
Hookstown
BRODHEAD RD
BEAVER VALLEY EXPRESSWAY
PATTERSON RD
HOLT RD
GARDEN
GREEN
LINCOLN HWY
5 MILE
10 MILE
Allegheny County
Beaver County
Washington County
D.10.1
D.10.2
E.11.1
E.10.1
E.10.2
E.11.2
F.11.1
D.9.1
D.8.1
D.7.1
E.9.1
E.7.1
F.11.2
D.6.1
E.8.1
E.2.1
F.10.1
F.9.1
D.5.1
F.6.1
F.5.1
D.4.1
F.4.1
G.8.1
G.10.1
E.3.1
F.2.1
D.2.1
G.3.1
F.1.1
H.5.2
H.6.1
H.5.1
H.9.1
H.6.2
J.7.1
L.3.2
L.3.1
K.4.1
J.4.1
L.4.1
J.10.2
J.10.1

SOUTHEAST 5 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
D.2.1	Bruce Mansfield Plant Entrance	Good
F.2.1	Intersection of Rt. 18 & Green Garden Rd.	Good
E.3.1	Intersection of Rt. 18 & Holt Rd. 1.1 mile from F2.1	Good
D.4.1	"Y" in road at Rt. 18 and Mowry Rd	Good
D.5.1	Main Plant Entrance ARCO/POLYMERS, Rt. 18	Poor
D.6.1	St. Joe Mineral Entrance, Rt. 18	Good
E.7.2	Center Exit of Rt. 60	Good
E.8.1	Aliquippa Exit of Rt. 60	Good
F.6.1	Intersection of Penny Hollow Park Rd & Green Garden Rd	Good
F.4.1	Intersection of Green Garden Rd & Patterson Rd	Good
G.3.1	Superior Mobile Homes, Rt. 18	Good
H.5.1	Intersection of Rt's 18 & 151	Good
J.4.1	Intersection of Rt's 30 & 151	Good
L.3.1	Main Intersection in Hookstown	Good

SOUTHEAST 10 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
D.2.1	Bruce Mansfield Entrance, Rt. 18	Good
F.2.1	Intersection of Rt. 18 & Green Garden Rd	Good
E.3.1	Intersection of Rt.18 & Holt Rd	Good
D.4.1	"Y" in Road at Rt. 18 and Mowry Rd	Good
D.5.1	Main Plant Entrance to ARCO/POLYMERS, Rt. 18	Poor
D.6.1	St. Joe Mineral Entrance, Rt. 18	Good
D.8.1	Intersection of Rt's 18 & 51, Beaver Valley Mall	Good
D.9.1	Gee Bee Shopping Center, Rt. 18/51	Good
D.10.1	Pheonix Glass Parking Lot, Penn Ave Monaca	Fair
D.10.2	Intersection of Constitution Blvd. and Monaca Rd	Poor
E.11.1	Entrance to West Aliquipa, Constitution Blvd.	Poor
E.10.1	Entrance to Aliquippa from Constitution Blvd.	Poor
E.10.2	Intersection of Monaca Rd & Franklin Ave, Alq.	Good
E.11.2	Ambridge - Aliquippa Bridge, Constitution Blvd.	Poor
F.11.1	Philips Power Station, Constitution Blvd.	Poor
F.11.2	Intersection of Rt's 51 & 151	Poor
F.10.1	Intersection of Rt's 151 & 60, 60 overpasses 151	Poor
G.10.1	2nd Intersection past Booktown (off Rt. 151)	Poor
H.11.1	Intersection of Road 04069 & Rt. 30	Poor
H.9.1	Raccoon Park Entrance, Rt. 30	Poor
J.10.1	Intersection of Rt's 18 & 168	Good
H.6.2	Intersection of Rt's 18 & 30	Fair
J.4.1	Intersection of Rt's 30 & 151	Good
L.3.1	Main Intersection in Hookstown	Good

SOUTHEAST ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
D.2.1	Bruce Mansfield Entrance, Rt. 18	Good
F.2.1	Intersection of Route 18 and Green Garden Rd	Good
E.3.1	Intersection of Rt. 18 and Holt Rd	Good
D.4.1	"Y" in Rd at Rt. 18 and Mowry Rd	Good
D.6.1	Main Plant Entrance to ARCO/POLYMERS, Rt. 18	Good
D.8.1	Intersection of Rt. 18 and Rt. 51 Beaver Valley Mall	Good
D.9.1	Gee Bee Shopping Center, Rt. 18/51	Good
D.10.1	Pheonix Glass Parking Lot, Monaca Penn Ave.	Fair
D.10.2	Intersection of Constitution Blvd. and Stobo Hill Rd	Poor
E.9.1	Intersection of Rt. 51 and Green Garden Road	Poor
E.11.1	Entrance to West Aliquippa, Constitution Blvd	Poor
E.10.1	Entrance to Aliquippa from Constitution Blvd	Poor
E.10.2	Franklin Ave. Aliquippa, Dairy Queen	Good
E.11.2	Ambridge-Aliquippa Bridge, Constitution Blvd	Poor
F.11.1	Philips Power Station Constitution Blvd	Poor
F.11.2	Intersection of Rt. 51 and Rt. 151	Poor
F.10.1	Intersection of Rt. 151 and Rt. 60 60 overpasses 151	Poor
H.11.1	Intersection of Rt. 30 with 04069 Rd	Poor
H.9.1	Raccoon Park Entrance Rt. 30	Poor
J.10.1	Intersection of Rts 18,168	Good
G.8.1	Steel Bridge on Rt. 151	Poor
H.6.1	2 miles east from 18 & 151 intersection or 2 miles west on Rt. 151 from G.8.1	Good
H.5.1	Intersection of Rt's 151 & 18	Good
H.6.2	Intersection of Routes 18 & 30	Fair
G.3.1	Superior Mobile Homes, Rt. 18	Good
J.4.1	Intersection of Rt's 30 & 151	Good
L.3.1	Main Intersection in Hookstown	Good
D.7.1	Entrance to Community College of Beaver County, Rt. 51	Good
E.7.1	KMART Shopping Center off of Rt. 51	Good
E.7.2	Center Exit of Rt. 60	Good
F.9.1	Bridge on Rt. 60, 1.6 miles from E.7.2 & F.10.1	Fair
E.8.1	Aliquippa Exit of Rt. 60	Fair
F.6.1	Penny Hollow Park Rd & Green Garden Rd	Good
F.4.1	Intersection of Green Garden Rd & Patterson Rd	Good
G.10.1	2nd Intersection past Booktown (off Rt. 151)	Poor

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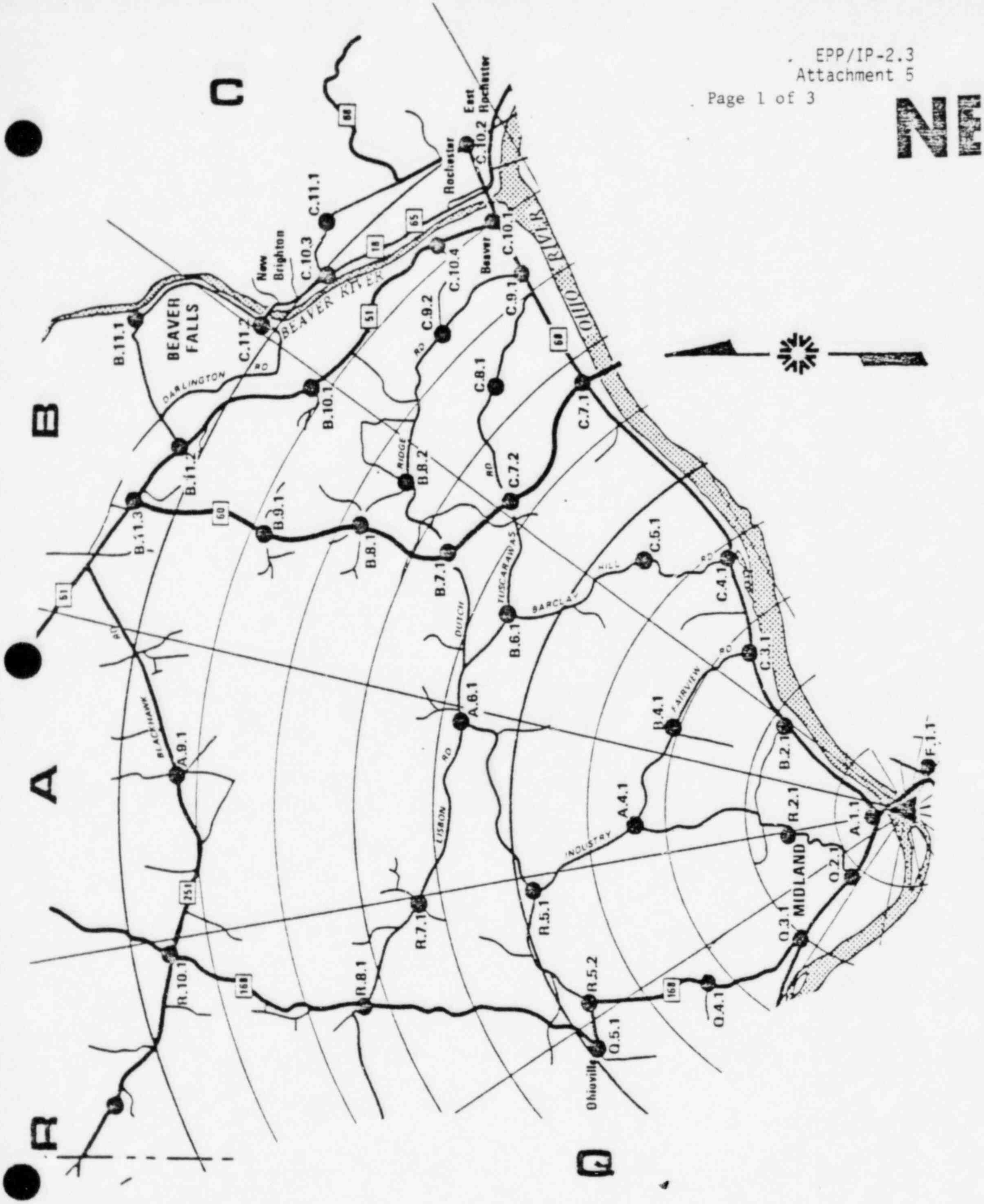
A
B
C
Q
R
BEAVER FALLS
New Brighton
Rochester
East Rochester
Beaver
BEAVER RIVER
OHIO RIVER
MIDLAND
Ohioville
DARLINGTON RD
BLACKHAWK RD
LISBON RD
INDUSTRY
DUTCH
TUSCARAWAS
BARCLAY
HILL RD
FAIRVIEW RD
RIDGE
51
60
65
68
18
251
168
A.1.1
A.4.1
A.6.1
A.9.1
B.2.1
B.4.1
B.6.1
B.7.1
B.8.1
B.8.2
B.9.1
B.10.1
B.11.1
B.11.2
B.11.3
C.3.1
C.4.1
C.5.1
C.7.1
C.7.2
C.8.1
C.9.1
C.9.2
C.10.1
C.10.2
C.10.3
C.10.4
C.11.1
C.11.2
F.1.1
Q.2.1
Q.3.1
Q.4.1
Q.5.1
R.2.1
R.5.1
R.5.2
R.7.1
R.8.1
R.10.1

NORTHEAST 5 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 Bridge on the Midland side of Ohio River	Good
B.2.1	Red Brick Bldg on left side of Rt. 68 1.5m from A.1.1	Good
C.3.1	Intersection of Rt. 68 & Industry-Fairview Rd	Good
C.4.1	Intersection of Rt. 68 & Barclay Hill Rd	Good
C.5.1	Top of Hill from Rt. 68 on Barclay Hill Rd.	Good
B.6.1	Intersection of Barclay Hill Rd & Tuscarawus Rd	Good
A.6.1	Intersection of Lisbon Rd and Tuscarawas Rd	Good
R.5.1	Intersection of Industry-Fairview Rd & Tuscarawas Rd	Good
R.5.2	Intersection of Tuscarawas Rd & Rt. 168	Good
Q.4.1	Intersection on Rt. 168 1.7 miles from R.5.2	Good
Q.3.1	Intersection of Rt. 168 and Rt. 68	Good

NORTHEAST 10 MILE ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 Bridge on the Midland side of Ohio River	Good
B.2.1	Red Brick Bldg on left side of Rt. 68 1.5 miles from A.1.1	Good
C.3.1	Intersection of Rt. 68 & Industry-Fairview Rd	Good
C.4.1	Intersection of Rt. 68 and Barclay Hill Road	Good
C.7.1	Intersection of Rt. 68 & Rt. 60 Rt. 68 overpasses Rt. 60	Fair
C.9.1	Beaver County Courthouse, Rt.68	Fair
C.10.1	Intersection of Rt's 68 & 51, 68 overpasses 51	Fair
C.10.2	Huntsman Funeral Home at right angle bend in Rt. 68	Good
C.11.1	Three way intersection at bottom of Marion Hill	Fair
C.10.3	Intersection of Marion Hill Rd and Rt. 18/65, New Brighton	Poor
C.11.2	Marrow Ford across bridge over Beaver River Rt.18	Poor
B.11.1	Intersection of Rt's 18 & 588	Poor
B.11.3	Intersection of Rt's 60 & 51 (end of Rt. 60)	Poor
A.9.1	Blackhawk Public Golf Course, Rt. 251	Poor
R.10.1	Intersection of Rt's 251 & 168	Poor
R.8.1	Intersection of Lisbon Rd & Rt. 168	Good
Q.5.1	Ohioville Vol. Fire Dept. Rt. 168	Good
Q.4.1	Intersection on Rt.168 2.3m from Q.5.1	Good
Q.3.1	Intersection of Rt's 168 & 68, Midland	Good

NORTHEAST ROUTE

Point	Location	Radio Communication
F.1.1	Plant Entrance	Good
A.1.1	Rt. 168 Bridge on the Midland Side of Ohio River	Good
B.2.1	Red Brick Bldg. on left side of Rt. 68 1.5 miles from A.1.1	Good
C.3.1	Intersection of Rt. 68 and Fairview Road.	Good
C.4.1	Intersection of Rt. 68 and Barclay Hill	Good
C.7.1	Intersection of Rt. 68 & Rt. 60 overpasses Rt. 60	Fair
C.9.1	Beaver County Courthouse, Rt. 68	Fair
C.10.1	Intersection of Rt's 68 & 51 68 overpasses 51	Fair
C.10.2	Huntsman Funeral Home at right angle bend in Rt. 68	Good
C.10.3	Intersection of Marion Hill Rd. and Rt.18/65	Poor
C.11.2	Marrow Ford Across Bridge over Beaver River Rt.18	Poor
B.11.1	Intersection of Rt's 18 & 588	Poor
B.11.2	Intersection of Rt's 588 & 51	Poor
B.10.1	Top of Falston Hill Golf Course	Good
C.10.4	Intersection of Rt. 51 and Baner Hollow Rd.	Poor
C.8.1	Top of Hill on Tuscarawus Rd at Walington Estates	Good
C.7.2	Intersection of Tuscarawus Rd. and Rt. 60	Good
C.5.1	Top of Hill from Rt.68 on Barclay Hill Road	Good
B.6.1	Intersection of Barclay Hill Rd and Tuscarawas Rd.	Good
A.6.1	Intersection of Tuscarawas Road and Lisbon Rd.	Good
R.7.1	Intersection on Lisbon Rd 2.4 miles from B.6.2	Poor
R.8.1	Intersection of Lisbon Rd. & Rt. 168	Good
R.10.1	Intersection of Rt's 168 & 251	Poor
A.9.1	Blackhawk Public Golf Course Rt.251	Poor
Q.5.1	Ohioville Vol. Fire Dept. on Rt. 168	Good
Q.4.1	Intersection on Rt. 168 no landmark (2.3m from Q.5.1 or 1.7m from R.5.2)	Good
Q.3.1	Intersection of Rt's 168 & 68	Good
B.11.3	Intersection of Rt's 60 & 51	Poor
B.9.1	Bridge on Rt. 60 over Brady's Run County Park	Poor
B.7.1	Intersection of Dutch Ridge Rd and Rt. 60	Good
C.7.2	Intersection of Tuscarawus Rd and Rt. 60	Good
B.4.1	western Beaver High School	Good
C.9.2	Beaver County Medical Center--Dutch Ridge Rd	Good
R.5.1	Intersection of Industry Fairview Rd & Tuscarawas Rd	Good
R.5.2	Intersection of Tuscarawas Rd and Rt. 168	Good

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AIR SAMPLE RECORD CARD

Air sample location: ______________________

Date: ____________ Surveyer: ________________

Sampler ID # ______________________________

Sampler flow rate ft^3: ____________

Sample time: (10 ft^3/Sampler flow rate) = ________

Sample start time: ________ Stop time: _________

Sample volume: ____________

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OFFSITE MONITORING FOR LIQUID RELEASE

A. OBJECTIVE

This procedure provides instructions for monitoring team personnel for performing offsite radiological monitoring in the event of a release of radioactive material to the Ohio River. Offsite monitoring is directed and coordinated by the EA&DP Coordinator and/or the Emergency Director in accordance with EPP/IP-2.1, "Emergency Radiological Monitoring".

B. PREREQUISITES/INITIAL CONDITIONS

1. A release of radioactive materials has occurred and has entered the Ohio River and the EA&DP Coordinator and/or the Emergency Director has requested an offsite survey.

2. TSC/EOF personnel have provided monitoring team members with specific instructions on sample locations, samples desired, and requirements for protective clothing and respirators, as applicable.

3. Sampling kits are available.

C. PRECAUTIONS

1. Monitoring teams must remain alert to their own exposure and request relief if their cummulative exposure approaches a BVPS administrative control level. The Emergency Director and/or the Radiation Control Coordinator may authorize exposure limit extensions, if necessary. Periodically, monitoring personnel shall read their dosimeters and report the readings to the TSC/EOF at least every 30 minutes, or when accumulated dose reaches 100 mrem.

2. Communications between the monitoring team and the TSC/EOF will normally be via telephone, however, it may be necessary to use DLC radio. Since radio communications at this frequency can be intercepted by commercially available scanners, all communications related to reporting survey data must be brief and factual, and free of exclamatory or alarming expressions.

3. Monitoring team personnel shall not supply raw data (if avaliable) to members of the general public or to news media personnel. Monitoring team personnel should courteously explain that the survey is a precautionary measure, that the survey data is raw data that hasn't been evaluated, and that significant final data is reported to State and local authorities. Refer all questions to DLC PID or to PEMA/BCEMA/CCDSA/HCOES.

4. Since implementation of proper protective actions onsite and offsite, and subsequent reconstruction of the event requires accurate information, observ the following guidelines:

   4.1 Carefully word data transmissions to the TSC/EOF to minimize possible confusion.

   4.2 Accurately document all survey data. Ensure that units associated with the data are clear. Enter the date and time on all survey records.

D. PROCEDURE

1. Obtain the appropriate sampling equipment from monitoring team kit(s) located in the Control Room. Obtain and re-zero assigned dosimeters, if applicable.

2. Obtain a Hi-band "Handie-Talkie" and check operation before leaving the Station. Keep the radio operational at all times while offsite in order to maintain communications with the TSC/EOF.

3. Prior to leaving the Station, ensure that you have necessary monitoring equipment and understand the sampling assignment. Leave the Station via the guardhouse. Retain your TLD and dosimeters while performing radiological monitoring offsite.

4. Don protective clothing and/or respirators if directed by EA & DP personnel. Such protective measures may be necessary if a significant airborne release has occurred concurrent with the liquid release.

5. Obtain a DLC vehicle, if available. Otherwise, use any available privately owned vehicle. Note gas tank level. Ensure that there is at least 1/2 tank of gas. Obtain another vehicle if necessary.

6. Proceed to the Midland Water Treatment Company as soon as possible. Maps showing the location of this and the East Liverpool water treatment plant is provided as Attachment 1.

7. Identify yourself as Duquesne Light Company employees with DLC identification card. Contractor personnel identify yourself with your DLC TLD badge.

8. Remove the proportional sampling pump discharge hose from the environmental sample bottle at the discharge of the treatment plant and place it in a clean 1-liter bottle. Override the sampler timer with the toggle switch to start the sample flow (Moving the toggle from ON to OFF and back to ON will cause the sampler to initiate a sample cycle. Repeat as necessary). Cap and label the environmental sample bottle as to sample location, time, and date.

9. When the first sample is complete, place the discharge hose in another clean 1-liter bottle. Return the sample pump to normal operation. Also label that bottle as to sample location, time of sampling, and date.

10. If a runner is available, send the environmental sample and the first sample back to the Station (or another designated location) for analyses.

11. Draw additional 1-liter samples every fifteen minutes until otherwise directed by the TSC/EOF. Leave the sampling pump in the normal operation mode when not drawing 1-liter samples.

12. As directed by the TSC/EOF, secure special sampling at the Midland Water Treatment Plant and proceed to the next water treatment plant, or return to the Station.

13. Before leaving any treatment plant, return sampling systems to normal operation.

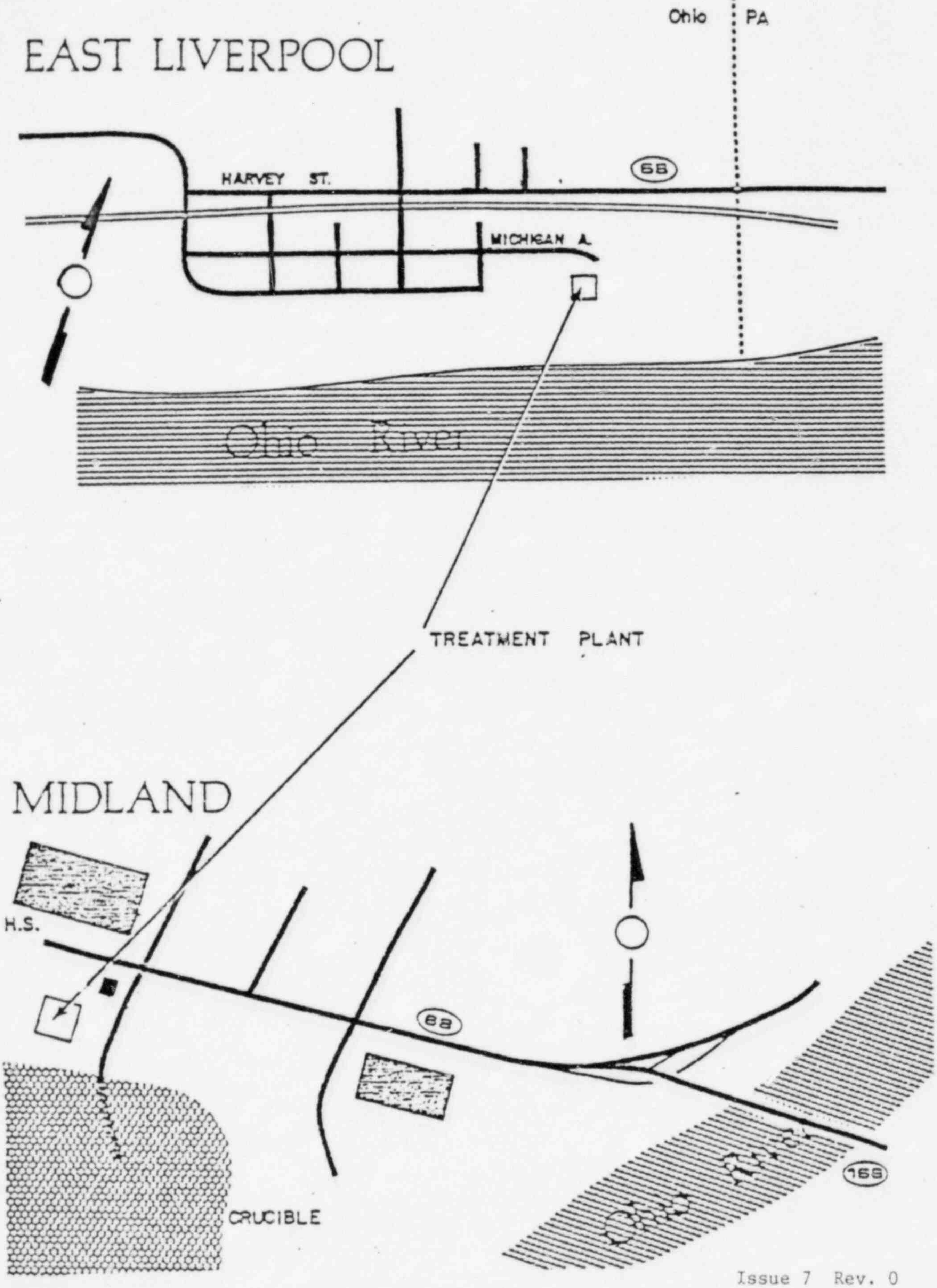
14. If directed by the TSC/EOF, obtain a river sample upstream of the BVPS site for background activity determination.

E. REFERENCES

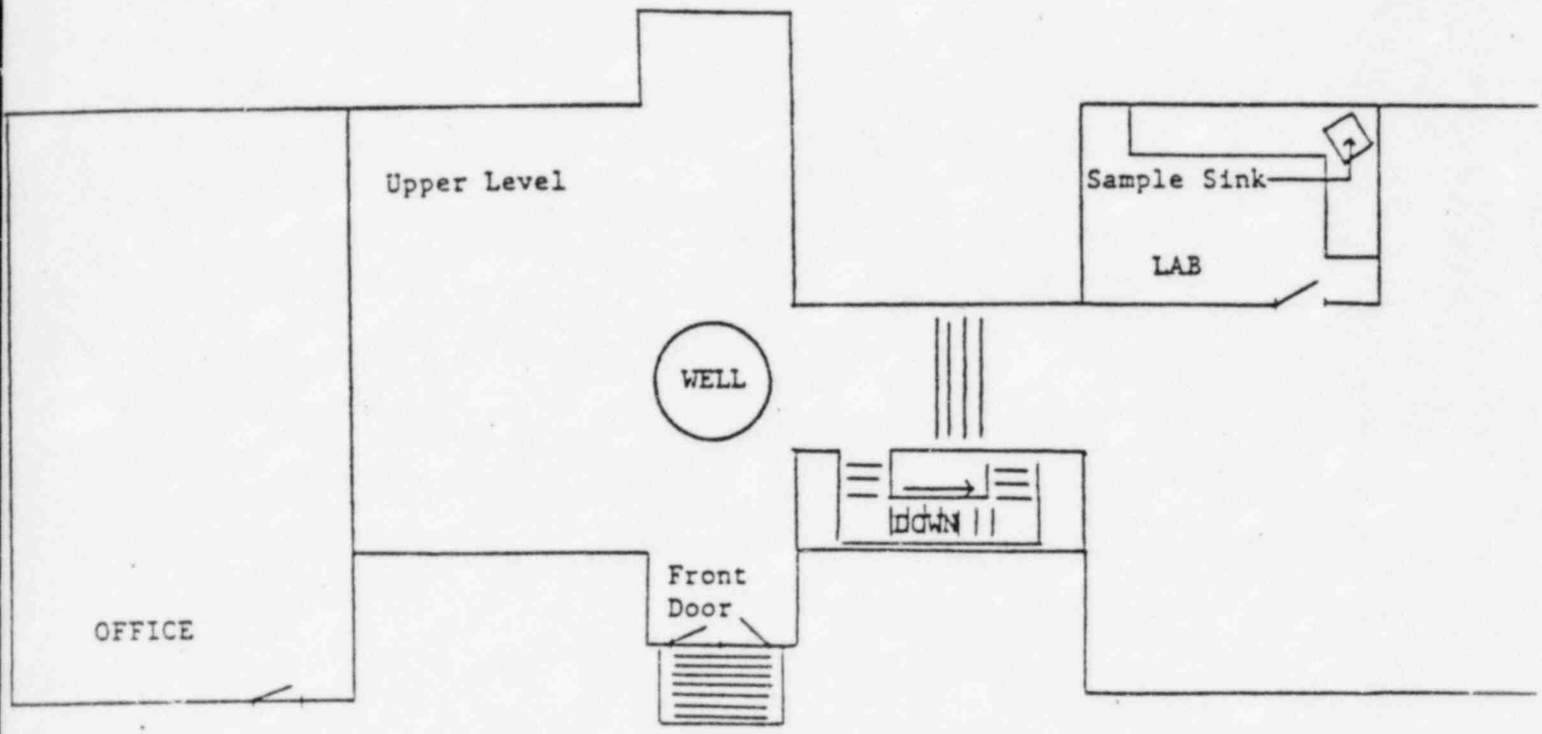
1. Beaver Valley Power Station Emergency Implementing Procedure EPP/IP-2.1 "Emergency Radiological Monitoring".
2. Beaver Valley Power Station Radiation Control Manual
3. Beaver Valley Power Station Chemistry Manual
4. Beaver Valley Power Station Environmental Monitoring Manual

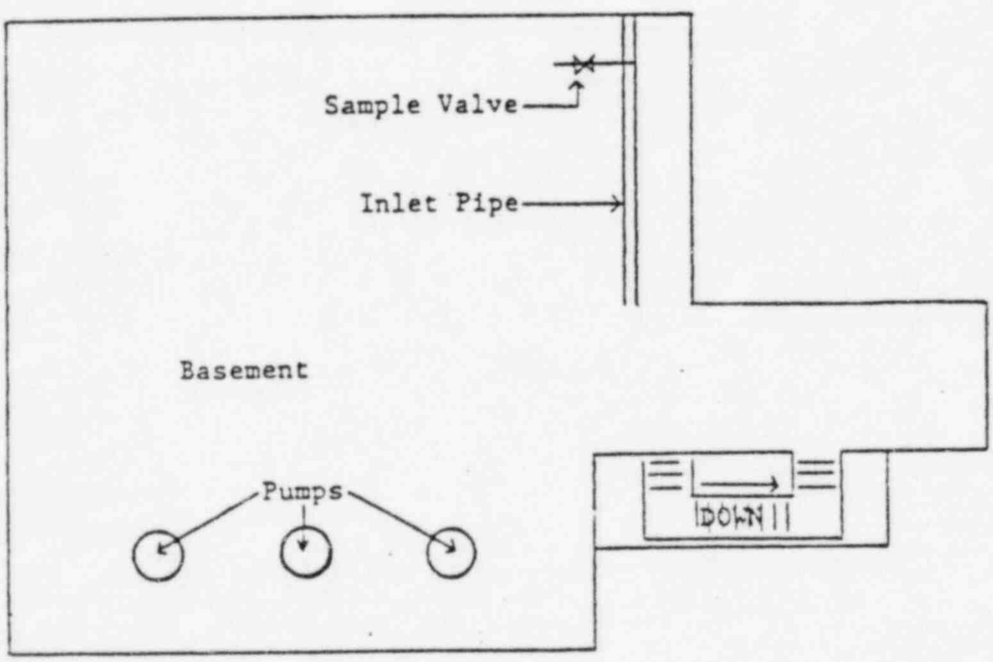
F. ATTACHMENTS

1. Figure 2.4-1, Water Treatment Plants
2. Midland Water Treatment Plant Floor Plans


Ohio
PA
EAST LIVERPOOL
HARVEY ST.
68
MICHIGAN A.
Ohio River
TREATMENT PLANT
MIDLAND
H.S.
68
168
CRUCIBLE

MIDLAND WATER TREATING PLANT





EMERGENCY ENVIRONMENTAL MONITORING

A. OBJECTIVE

This procedure provides supplementary instructions for the collection of environmental samples (other than drinking water) in the event of a release or radioactive material to the environment during an emergency. This procedure is intended to adapt the existing environmental monitoring procedures to emergency environmental monitoring. All offsite monitoring is directed and coordinated by the EA & DP Coordinator and/or the Emergency Director in accordance with EPP/IP-2.1, "Emergency Radiological Monitoring".

B. PREREQUISITES/INITIAL CONDITIONS

1. A significant release of radioactive materials to the environment has occurred; and the EA & DP Coordinator and/or the Emergency Director has determined the need for additional or accelerated environmental monitoring.
2. EA & DP personnel have provided monitoring team members with specific instructions on sample locations, samples desired, and requirements for protective clothing and respirators, as applicable.

C. PRECAUTIONS

1. Monitoring teams must remain alert to their own exposure and request relief if their cummulative exposure approaches a BVPS administrative control level. The Radiological Controls Coordinator may authorize exposure limit extensions above administrative levels. The Emergency Director may authorize exposure limit extensions in excess of 10 CFR 20. Periodically, monitoring personnel shall read their dosimeters and report the readings to the TSC/EOF at least every 30 minutes, or when accumulated dose reaches 100 mrem.
2. Communications between the monitoring team and the TSC/EOF will normally be via DLC radio. Since radio communications at this frequency can be intercepted by commercially available scanners, all communications related to reporting survey data must be brief and factural, and free of exclamatory or alarming expressions..

3. Monitoring team personnel should not discuss details of the emergency with members of the general public or to news media personnel. Monitoring team personnel should courteously explain that the sampling is a precautionary measure, that the samples will be analyzed and significant sample results will be reported to State and local authorities. Refer all questions to DLC PID or to PEMA/BCEMA.

4. Since control of the emergency and subsequent reconstruction of the event requires accurate information, observe the following guidelines:

   4.1 Carefully word data transmissions to the TSC/EOF to minimize possible confusion.

   4.2 Ensure that all samples returned to the Station, or other designated analysis location, are clearly identified as to sample location, sample type, and date/time.

   4.3 In the event of a severe release, environmental surfaces may be significantly contaminated. Take appropriate precautions to minimize inadvertent contamination (and cross-contamination) of samples, particularly foodstuffs and milk.

D. PROCEDURE

1. Obtain the appropriate sampling equipment from monitoring team kits(s) or other supply locations. Obtain and re-zero assigned dosimeters, if applicable.

2. Obtain a Hi-band "Handie-Talkie" and check operation before leaving the Station. Keep the radio operational at all times while offsite in order to maintain communications with the TSC/EOF.

3. Prior to leaving the Station, ensure that you have necessary monitoring equipment and understand the sampling assignment. Leave the Station via the guardhouse. Retain your TLD and dosimeters while performing radiological monitoring offsite.

4. Don protective clothing and/or respirators if directed by EA & DP personnel. Such protective measures may be necessary if a significant airborne release has occurred.

5. Obtain a DLC vehicle, if available. Otherwise, use any available privately owned vehicle. Note gas tank level. Ensure that there is at least ½ tank of gas. Obtain another vehicle if necessary.

6. Proceed to the assigned sampling locations and obtain samples as directed by the TSC/EOF and in accordance with existing environmental monitoring procedures.

7. If it is necessary to enter private property, identify yourself as Duquesne Light Company employees with DLC identification card (contractors-use your DLC TLD badge), and briefly and courteously explain the reason for the special sampling. (See Step C.3 of this EPP/IP.)

8. If a runner is available, send initial samples back to the Station (or other designated location) for analysis.

9. Continue collecting samples until all of the samples have been collected or as directed by the TSC/EOF.

E. REFERENCES

1. Beaver Valley Power Station Emergency Implementing Procedure EPP/IP-2.1 "Emergency Radiological Monitoring".

2. Beaver Valley Power Station Radiation Control Manual

3. Beaver Valley Power Station Environmental Technical Specificatons

4. Beaver Valley Power Station (Environmental Monitoring Procedures)

F. ATTACHMENTS

1. Environmental Sampling Locations

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Type of Sample	Sample Point	Sampling Point Description
Surface Water	**2	Station Discharge (outfall)
	2A	BVPS Discharge
	3	Shippingport Station Discharge
	5	East Liverpool Water Plant (raw)
	49	Upstream Side Montgomery Dam
	49.1	ARCO Plant
Drinking Water	4	Midland Water Plant (treated)
	5	East Liverpool Water Plant (treated)
Fish	2	In or Near Station Discharge
	49	Upstream Side Montgomery Dam
Bottom Sediments	2	In or Near Station Discharge
	3	Near SAPS Discharge
	49	Upstream Side Montgomery Dam
	50	Upstream New Cumberland Dam
Well Water	11	1 Well in Shippingport, PA.
	13	Well at Meyer's Diary Farm
	14	Hookstown, PA.
	15	Georgetown, PA.
Soil 13 Meyers Farm	32	Midland
22 South of Site	46	Industry
27 Brunton Dairy	47	East Liverpool
29A Nichol's Dairy Farm	48	Weirton, WVA
30 Shippingport	51	Aliquippa
Milk	25	Searight Dairy
	27	Brunton Dairy
	29	Nichols Dairy
	96	Windsheimer
	*** 61	C. Allisons
	*** 62	Lyon's
	*** 65	Straights
Air Particulate	13	Meyers Farm
	27	Brunton Dairy
	28	Sherman's Farm
	29B	Beaver Co. Hospital
	30	Shippingport, PA
	32	Midland, PA
	46	Industry, PA
	47	E. Liverpool, OH
	48	Weirton, WVA
	51	Aliquippa, PA.
Feedstuff	25	Searight Dairy
Foodcrops	30	3 Gardens, (1 Shippingport Boro)
	46	Industry
	15	Georgetown

	Thermoluminescent Dosimeters	70	Western Beaver School
		71	Brighton Twp School
		72	Logan School
		73	Potter Twp School
		74	Community College-Center Twp.
*33-44	Site Periphery	75	Hold Road
10	Shippingport Boro, PA.	76	Raccoon Twp School
13	Meyer's Farm	77	Green Garden Road
14	Hookstown, PA	78	Raccoon Municipal Bldg.
15	Georgetown, PA.	79	Rt. 18 & Rt. 151
27	Brunton's Dairy	80	Raccoon Park
28	Sherman's Dairy	81	Southside School
29B	Beaver County Hospital	82	Hanover Municipal Bldg.
30	Shippingport, PA. (S.S.)	83	Mill Creek Rd.
31	Onsite West	84	Hancock Children's Home
32	Midland, PA. (S.S.)	85	Rt. 8 & Rt. 30
45	Mt. Pleasant Church	86	E. Liverpool Canills House
45.1	Raccoon Twp, PA (Kennedy's Corner)	87	Calcutta Road
		88	Midland Heights
46	Industry (church)	89	Ohioville
46.1	Industry (tire co.)	90	Fairview School
47	East Liverpool Water Co.	91	Pine Grove & Doyle Rds.
48 (a)	Weirton Water Co.	92	Georgetown Rd.
51	Aliquippa, PA (S.S.)	93	Sunset Hills-Midland
59	Iron's Farm	94	McCleary Road, Wilson
60	Haney's Farm		

*Not Required by BVPS ETS

NOTE

This table represents the environmental measures performed at the time this document was prepared. The current environmental monitoring program, including: locations, periodicities, and analyses performed is described in Appendix B to the Beaver Valley Power Station FSAR.

** Not an Environmental Sample - Effluent Sample

*** These three dairies are dependent on highest deposition factors.

DOSE PROJECTION

A. OBJECTIVE

This procedure provides guidance and instructions for estimating offsite doses resulting from an unplanned and/or unmonitored airborne release of radioactive material. The main body of this procedure identifies criteria and guidelines for dose projection, such as when is it required, how often should it be performed, and which dose projection to use. The attachments to this procedure (tabs) provide instructions for performing dose projection using the various dose projection methods. A multiple of methods is provided to cover possible contingencies such as offscale monitors, inoperative meteorology instruments, etc.

The EA and DP Coordinator is responsible to ensure the actions outlined in this procedure are implemented, if necessary.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.
2. A release of radioactive material in excess of environmental technical specifications (ETS) has occurred or is suspected to have occurred.

C. PRECAUTIONS

Precautions are specified in the text of the applicable tab(s).

D. DISCUSSION

1. Classification of Release

1.1 The dose projection calculation method chosen for use depends partly on the type of release. Categorize releases as follows:

Rx. Bldg. & SLCRS Vent (Atop Containment)	RM-1VS-107	Ground Level
Ventilation Vent (Atop Auxiliary Building)	RM-1VS-101	Ground Level
Process Vent-Gas. Waste Sys. (cooling Twr)	RM-1GW-108	Elevated Release
All Other Airborne Releases		Ground Level

2. Dose Projection Methods

2.1 General

This procedure provides several different calculation methods for performing dose projections. The method(s) used will depend on the nature of the release, the availablility of release and meteorology information, the operability of the meteorological monitoring computer, and the time available. Procedures for each of the methods is provided as Tabs 1 through 12 of this procedure. The tabs are arranged in two general categories. The initial tabs describe different methods of obtaining X/Q, while the latter tabs describe different means of calculating the estimated offsite dose. (The X/Q calculated by any one method is suitable for any of the dose projection calculations, providing the meteorological conditions are unchanged). The Emergency Director (Shift Supervisor initially) will determine which method is appropriate and perform the dose projection calculations until such time as the on-duty staff is augmented and a designated Environmental Assessment and Dose Projection Coordinator is available. At that time, the EA & DP Coordinator will determine which method in this procedure, or which additional methods, are suitable. To facilitate the selection of the proper method, each of the methods, and their prerequisites and limitations is discussed below.

2.2 Meteorological Monitoring System TAB-1

The meteorological monitoring system is a computer-based system which monitors meteorological conditions at the Beaver Valley Site. The system monitors meteorological conditions continuously over a fifteen minute period, averages the parameters, calculates the X/Q for elevated and ground level releases, provides a print-out of the fifteen minute average data, and repeats the cycle. The X/Q for a ground level release is calculated to the site boundary. The X/Q for an elevated release is calculated to the each of ten discrete distances, and the maximum X/Q and associated distance is printed out.

This method of determining X/Q is the most rapid method available as it requires no calculations on the part of the operator (assuming the system is on-line). Its limitation is the limited number of distances which can be evaluated. It will be necessary to use other methods to calculate the projected dose at locations futher than those provided.

2.3 Xu/Q Tables Method TAB-2

Tab-2 provides a X/Q determination method based on selecting a value corresponding to the observed stability class and desired distance from a table or graph. The X/Q value is then determined by dividing the Xu/Q value by the wind speed. This method involves only minimal calculation, provides for user chosen distances, and can be performed rapidly. Only ground level releases are addressed.

2.4 Xu/Q Overlay Method TAB-3

Tab-3 provides a X/Q determination based on transparent overlays which are positioned over a map of the emergency planning zone. Overlays are provided for various wind speeds and stability classes. Although this method involves no calculation, the method is not as accurate as that provided in Tabs 1 and 2.

2.5 Xu/Q Alternate Methods TAB-4

Tab-4 identifies alternate sources of meteorological information and provides guidance on using this data for determining Xu/Q if Station meteorological data is unavailable from site instrumentation.

2.6 Supplementary Meteorological Parameters TAB-5

This tab provides a means to determine the plume width and height, and the plume transite time. These parameters aid in the evaluation of meteorological data and in the application of protective action assignments downwind.

2.7 Dose Projection by Hand Calculation Based of FSAR Accident Analysis Tab-6

This method calculates the whole body and thyroid doses for the event in which no specific release data is readily available. The method is based on the FSAR accident analysis. Since it is unlikely that the actual accident parameters will be the same as the accident analysis assumptions, this method is at best conservative.

2.8 Dose Projection by Hand Calculation Based on Monitor Reading TAB-7

This method is suitable for rapid determination of whole body and thryoid doses based on gross beta or gross gamma effluent monitor reading. Correction factors are provided to adjust the monitor response for expected radioisotopic mixes for various accidents. Calculation worksheets provide an option of using numerical or graphical methods for this calculation.

In order to use this method, the monitor reading, the source of the radioactivity (type of accident), and the flow rate through the monitor must be known.

2.9 Dose Projection by Hand Calculation Based on Known Isotopic Release Rate

The method described in this tab calculates the whole body and thyroid doses resulting from a known isotopic release rate. (For example: 1 E-4 μCi/cc of Kr-85 to be released at 15,000 cfm for 1 hour.) This method is more accurate than the previous methods, but will require more extensive calculations by the Emergency Director or the EA & DP Coordinator. Thus, this method is more suitable for planned releases, or releases which have not commenced, and for which time is available to perform the calculations.

2.10 Dose Projection by Hand Calculation Based on Known Release TAB-9

This method calculates the whole body and thyroid doses resulting from a known release of radioiodines and/or noble gases. (For example: 10 Ci of I-131 have or will be released.) As with Tab-8, this method is more accurate, but also more time consuming.

2.11 Dose Projection Based on Field Measurements TAB-10

This method calculates the whole body and/or thyroid doese from an unmonitored release by measuring the actual dose rate in the field and working backwards to calculate a source term to be used in the other calculations addressed in the other tabs. An alternate method provides for back-calculation of the radioiodine release source term. Due to the significant time delay necessary to dispatch a monitoring team and gather necessary information, this method should be used only as a last resort.

2.12 Dose Assessment Based on Environmental Measurements and Samples

Tab 11 is a compendium of dose assessment methods which can be used to correlate environmental sample media analysis results to a dose commitment. This Tab includes 6 parts:

Part 1 Child thyroid dose from field measurements on air samples

Part 2 Child thyroid dose for lab analysis of air samples

Part 3 Child thyroid/whole body dose commitment due to ingestion of contaminated water, milk, food

Part 4 Child thyroid dose commitment due to ingestion of contaminated milk--alternate method

Part 5 Whole body dose rate from standing on contaminated ground

Part 6 Estimation of off-site surface contamination based on release parameters

2.13 Integrated Dose Assessment

Tab 12 provides a capability to integrate all exposure pathways into a single integrated dose and to perform trend analysis on these results. The methodology encompasses projected dose, measured dose, survey results, ingestion results, and inhalation results at various locations.

3. Derivation

The derivation of the methodologies used in this EPP/IP is documented in Annex G of the EPP/IPs.

E. PROCEDURE

1. In the event of a known or suspected airborne release of radioactive materials greater than BVPS Technical Specifications, immediately ascertain if a release did in fact take place (or will take place immediately). If a release did take place, or will take place, proceed with the remaining steps in this procedure.

2. Determine the approximate magnitude of the release. Further dose projections should be performed based on these preliminary estimates and the following criteria:

2.1 For all monitored releases in the Unusual Event emergency classification, dose projections in accordance with this procedure need not be performed as a general rule, due to the minimal off-site significance of such releases. Post-accident evaluation of off-site doses for releases in the Unusual Event category may be necessary to comply with environmental technical specifications. In these cases, the off-site doses may be calculated using the methodology contained in th BVPS Off-site Dose Calculation Manual (ODCM).

2.2 For all other releases, dose projection shall be performed.

3. Based on the known parameters about the incident, availability of data, and available time, choose the most advantageous X/Q and dose projection calculation method. Use Section D of this procedure for guidance as necessary.

4. Determine if the release is elevated or ground level.

5. Determine meteorological parameters. If meteorological instrumentation is inoperative, refer to Tab 4 for alternate data source.

6. Determine the X/Q value at the chosen distance in accordance with instructions in the selected tab (Tabs 1 through 4).

7. Determine the whole body dose and child thyroid dose in accordance with instructions in the selected tab.

NOTE

(Adult, infant, and teenager thyroid doses may be calculated if time permits, but all protective action recommendations will be based on the child thyroid projected dose, and the whole body dose.)

8. Document all calculations on supplied data sheets. Ensure that the date and time are clearly identified on the calculation sheet.

9. Continue dose projection activities as long as release is on-going or imminent, refining earlier projections if possible.

10. Report dose projection results to the following authorities as part of the initial notification and follow-up notifications. These authorities should be notified immediately of any significant change (ie: greater then 100 mrem) in subsequent dose projection results.

11. Once the EA & DP area is activated and the off-site agencies are activated, EA & DP personnel will relay significant changes to the following agencies on a continuing basis, with a periodicity consistent with the rate of change and/or the magnitude of the change in assessments. When this interface is established, the agencies listed above will be kept apprised by their respective state agency. Significant dose assessment results and protective action recommendations will continued to be incorporated in initial and follow-up notifications.
    11.1 DER/Bureau of Radiation Protection (White phone)
    11.2 Ohio DSA/Ohio Dept. of Health
    11.3 West Virginia OES/WV Dept. of Health

12. Discontinue dose projection activities when:
    12.1 The release has been terminated and there is no further release expected, and
    12.2 The emergency condition has been terminated by the Emergency Director or Emergency/Recovery Manager.

F. REFERENCES

1. Beaver Vally Power Station Emergency Preparedness Plan and Implementing Procedures
2. Title 10 Code of Federal Regulations Parts 20 and 50
3. "Duquesne Light Company Meteorological Monitoring System" NUS-1539, Volume 1, Revision 3
4. EPA 520/1-75-001, "USEPA Manual for Protective Action Guides and Protective Actions for Nuclear Power Plant Incidents"
5. Beaver Vally Power Station FSAR Chapter 14
6. NUREG-0654/FEMA REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."

G. ATTACHMENTS

1. Tabs 1 through 12

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X/Q BY METEOROLOGICAL MONITORING SYSTEM

A. PROCEDURE

The Meteorological Monitoring System is normally on-line, reporting data to the central computer and to the remote terminal located in the BVPS Control Room. Normally, no operator action is required to obtain data from the system other than looking at the most recent printout. The Control Room terminal (Terminet-300) prints out the following data every fifteen minutes when the Terminet is on-line:

- o Wind Speed at 35, 150, and 500 feet
- o Wind Direction at 35, 150, and 500 feet
- o Wind Direction Standard Deviation at 35, 150, and 500 feet
- o Temperature at 35 feet
- o Temperature difference at 35, 150, and 500 feet
- o Dewpoint
- o Rainfall (inches)
- o Maximum X/Q at 2000 feet for a ground level release and direction of release
- o Maximum X/Q for an elevated release and distance and direction away from the site. (Possible distances: 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1500, and 2200 meters)
- o Delta T-150-35 feet
- o Delta T-500-35 feet

B. ALTERNATE PROCEDURE

Normally, the Terminet and the monitoring system operate without operator interaction. If the Teminet has been taken off-line, restore system operation as follows:

1. Stating the Terminet 300

1.1 Depress the ON/OFF rocker switch on the right rear of the printer to the ON position. The alarm tone will beep and the STANDBY and READY lights will be on. If the INTERRUPT light is on, see Step 1.4.

1.2 Check the following switches in the designated positions:

TRANSPARENCY - OFF
INHIBIT - PRINT
RATE - 10
LINESPACE - 1
ALL CAPS - ON
AUTO LF - OFF

1.3 The Terminet is ready for on-line operation.

1.4 If the INTERRUPT light is lit at anytime, the printer will not work with the computer. The INTERRUPT light indicates a hardware problem with the monitoring system. The system should be tagged OOC, and a work request submitted for repairs.

1.5 Every fifteen minutes the Terminet will go "on-line" and printout the meteorology report. If the Terminet does not printout and the INTERRUPT light is not lit, the report routing may have been inadvertantly changed. Proceed as follows:

1.5.1 Press the ON-LINE pushbutton. The motor will start and the printer will print an asterisk.

NOTE

The printer is automatically placed in the STANDBY mode at the end of each interactive sequence. If at any time in an interactive sequence the printer goes into the STANDBY mode, simply press the ON-LINE pushbutton. The Terminet will return to standby if an entry (or an additional character) is not made within 30 seconds.

1.5.2 Type in "SEND_P_B_7" (where_= a typed space), carriage return. If the entry is correct, the Teminet will respond with the work "VALID" and an asterisk.

1.5.3 If a typing error is made, press ON-LINE. The Terminet will print an asterisk signifying its availability for new entries.

1.5.4 If the Terminet does not respond as described, a hardware problem exists and the system should be placed OOC.

2. CALIBRATION

An automatic routine calibration check is performed daily. Non-routine calibrations are performed in accordance with the monitoring system operating manual.

C. ATTACHMENT

1. Typical Printout.

Attachment 1

```
*20 AUG 1974
TIME LEVEL   -----WIND----- --TEMPERATURE--        ---STATUS---
             -WS-    -WD-   -SD-    -AMB- DIF-    DWPT  RAIN    WWSADDR-GTC-
             MPH     DEG.   DEG.    FAR.  FAR.    FAR.  IN.     SDIMFWM
1600   35    XX.X    XXX    XX.X    XXX.X XX.X    XX.X  XX.X    AA-A-AA-AAAA
      150    XX.X    XXX    XX.X          XX.X                  AA--S-------
      500    XX.X    XXX    XX.X          XX.X                  AA--A-------
*
MAX X/Q AT 2000 FT FOR A GROUND RELEASE =+X.XXXXXX-XXX
     AND+XXX.X DEGREES AWAY FROM THE PLANT.
MAX X/Q FOR ELEVATED RELEASE IS +X.XXXXXX-XXX
     AND OCCURS +XXX.X DEGREES AWAY FROM THE PLANT AT +XXXX.X METERS.
DELTA T 150-35 FT A-AAA-------A
DELTA T 500-35 FT A-A---------A
*
1615   35    XX.X    XXX    XX.X    XXX.X XX.X    XX.X  X.XX    AA-A-AA-AAAA
      150    XX.X    XXX    XX.X          XX.X                  AA--A-------
      500    XX.X    XXX    XX.X          XX.X                  AA--A-------
*
*
MAX X/Q AT 2000 FT FOR A GROUND RELEASE =+X.XXXXXX-XXX
     AND +XXX.X DEGREES AWAY FROM THE PLANT.
MAX X/Q FOR ELEVATED RELEASE IS +X.XXXXXX-XXX
     AND OCCURS +XXX.X DEGREES AWAY FROM THE PLANT AT +XXXX.X METERS.
DELTA T 150-35 FT A-AAAAAAAAAA
DELTA T 500-35 FT A-AAAAAAAAAA
```

BEAVER VALLEY 15-MINUTE REPORT
(Shown for two 15-minute printouts)

NOTE:

X = numeral (0-9)

A = letter

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X/Q VALUES BY Xu/Q TABLES

A. PURPOSE

This tab provides tabular methods for determining the X/Q value at any given distance under various conditions of wind speed and stability calss. There is a worksheet provided for ground level release calculations. A method is not provided for elevated releases due to the lower significance of these pathways at BVPS. If an elevated release does occur, the ground level calculations will provide a conservative estimate of downwind dispersion (overestimate), and could be used if the nature of the release can be considered as being eleveated (ie: high energy containment failure).

B. PREREQUISITES

1. The following meteorological parameters must be known:

    1.1 Wind speed (mph) at 35' (analog recorder SDR-MT-600 or Terminet)

    1.2 Wind direction at 35' (analog recorder SDR-MT-600 or Terminet)

    1.3 Delta-T for 150-35' (analog recorder XR-MT-201 black trace or Terminet)

    1.4 The release parameters, as measured on effluent monitors, and/or the accident classification must be known.

C. PRECAUTIONS

1. The wind direction as indicated on the analog recorders or the Terminet, and as used in reporting meteorological data between the station and offsite agencies is the wind direction <u>from which the wind is coming</u>. It is <u>not</u> the direction to which the plume is headed.

2. Meteorological parameters (ie: wind speed, wind direction, delta-T) at elevations other than those specified herein, cannot be substituted for the parameters at the specified elevation without error in most cases.

3. Because of the complex terrain surrounding the Beaver Valley Power Station, it is extremely difficult to calculate "true" atmospheric dispersion in a hand calculational method. This method expressed in this tab is generally based on the guidance of Regulatory Guide 1.145 and incorporates a straight-line Gaussian model. Since plume transport is unlikely to be "straight-line" because of the terrain, this method establishes the upper limit of the dispersion value, regardless of direction. The actual X/Q value applicable to any given point would likely be lower.

D. PROCEDURE

1. Using attachments 1 and 2 to this tab, determine the appropriate ground level dispersion factor (X/Q) for the site boundary initially, and other downwind distances as necessary based upon consideration of the wind speed, magnitude of the release, precipitation, population density, etc. If the site boundary dose commitment calculated using the derived X/Q exceeds the protective action levels of EPP/IP-4.1, the X/Q (and associated dose commitment) at the 2 mile radius, and other distances as necessary, shall be calculated.

2. If the 150-35' delta-T is unavailable due to instrument malfunction, refer to Tab 4 of this EPP/IP for sources of alternative meteorological data. When such data is obtained, determine the equivalent delta-T as follows:

$$(\text{Temperature}_{High} - \text{Temperature}_{low}) \times \frac{115}{(\text{elev}_h - \text{elev}_l)} = \text{Delta-T}_{150-35}$$

$$(\underline{\qquad\qquad\qquad} - \underline{\qquad\qquad\qquad}) \times \frac{115}{(\qquad - \qquad)} = (\underline{\qquad\qquad})$$

Where: $\text{Temperature}_{high}$ = temperature measured at elev_h; Temperature_{low} = temperature measured at elev_l.

3. Document the X/Q value determined on the worksheet. This value can be used in one of the dose calcualtion methods provided in latter tabs to this EPP/IP.

X/Q WORKSHEET

Observed 35' wind speed: ________________ (analog recorder SDR-MT-600 or Terminet)

Observed 150'-35' Stability Class: __________ (See instructions below, or Terminet)

Xu/Q Values for Selected Distances

Stability	EAB	2 mile	5 mile	10 mile
ABC	1.2 E-4	4.5 E-6	7.2 E-7	1.8 E-7
D	5.5 E-4	4.7 E-5	1.2 E-5	4.4 E-6
E	9.3 E-4	9.9 E-5	2.8 E-5	1.1 E-5
FG	1.5 E-3	2.2 E-4	6.7 E-5	2.8 E-5

EAB: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

2.0 mi: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

5.0 mi: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

10 mi: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

_____ mi: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

INSTRUCTIONS

1. Observe and record the 35' elevation wind speed, in miles per hour, as indicated on the Terminet, or on analog recorder SDR-MT-600.

2. Determine the stability class appropriate for the 150'-35' elevation. The stability class can be directly read off of the Terminet print-out. Alternately, the stability class can be determined from the multi-point alanlog recorder XR-MT-201, as follows:

2.1 **Remove the plastic stability class overlay from the Shift Supervisor's** copy of this procedure. (Other copies have a paper reproduction of the overlay. If the overlay is not available, the delta-T range appropriate to each stability class is identified on the graph attached.)

2.2 Open the recorder bezel and place the overlay over the chart paper, aligning the zero on the overlay with the scale zero on the recorder paper.

2.3 Note the latest (topmost) black (pen 1) trace on the recorder in relation to the delta-T_1) (ΔT_1) stability scale on the overlay. This is the stability class.

Note

The chart paper, recorder scale, and the overlay have two delta-T scales -- one for 150'-35' (ΔT_1) and one for 500'-35' (ΔT_2). ensure that the ΔT_1 scale (-4 to +8) are being used.

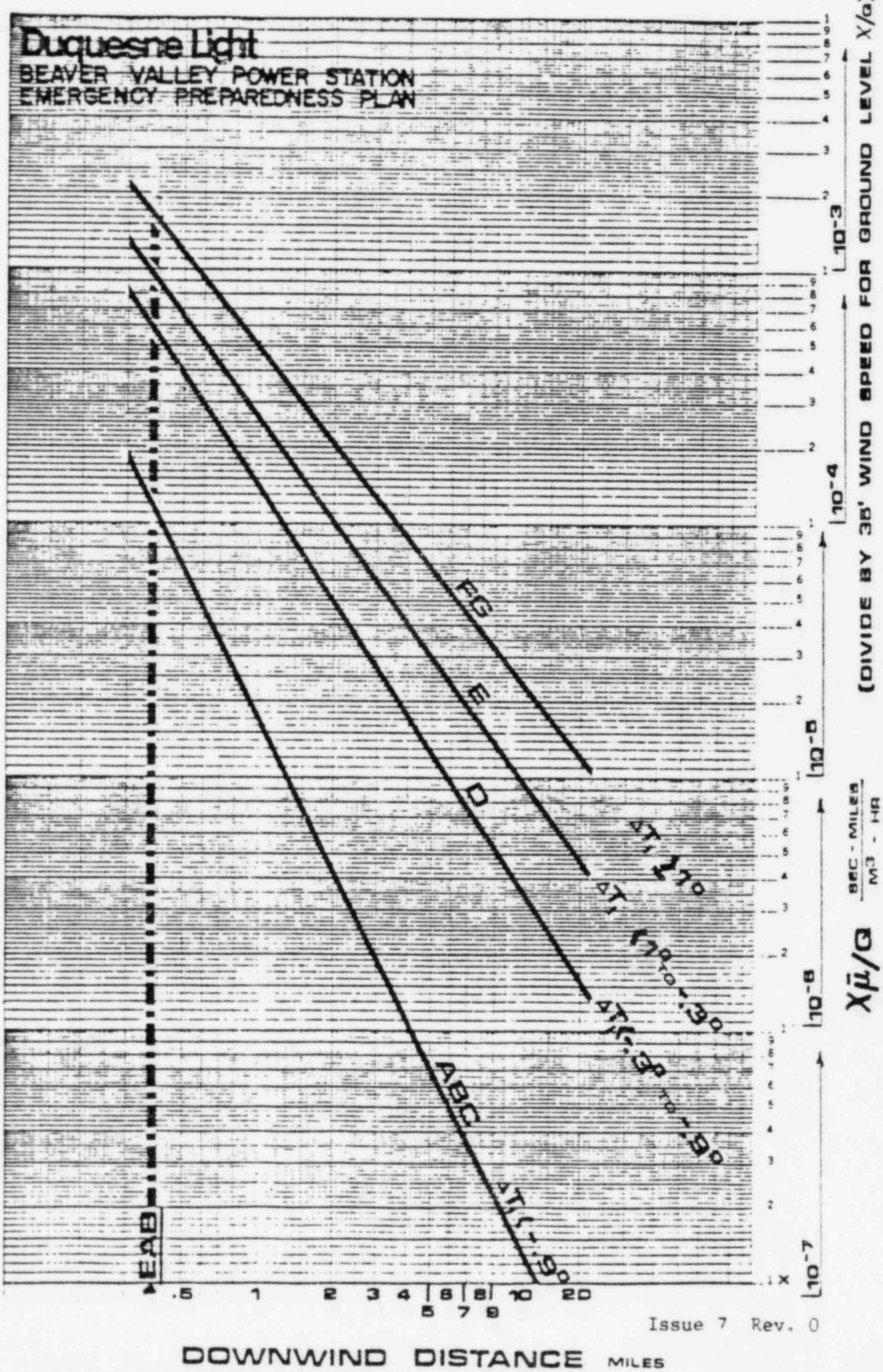
3. Only four stability classes are used for emergency purposes. Terminet classes A, B, and C, are represented as class ABC. Terminet classes F and G are represented as class FG. Record the stability class.

4. For the site boundary (EAB) location initially, and for other distances if the site boundary dose commitment indicates the need, determine a value of X/Q as follows. Note that the dose commitment is at a maximum at the site boundary and decreases with distance.

4.1 Using the stability class recorded in step 3, identify the values of Xu/Q for the distance specified from the provided, or for other optional distances using attached graph. Record these Xu/Q values in the spaces provided.

4.2 From step 1, record the current wind speed in the space provided for each distance to be evaluated.

4.3 Divided the Xu/Q value by the wind speed to obtain the value of X/Q. Record these X/Q values in the space provided for each distance.


Duquesne Light
BEAVER VALLEY POWER STATION
EMERGENCY PREPAREDNESS PLAN
FG
E
D
ABC
EAB
ΔT₁ ≤ 1.7°
ΔT₁ (.7° to -.3°)
ΔT₁ (-.3° to -.9°)
ΔT₁ (-.9°
.5
1
2
3
4
5
6
7
8
9
10
20
DOWNWIND DISTANCE MILES
10^-3
10^-4
10^-5
10^-6
10^-7
Χū/Q SEC - MILES / M³ - HR
(DIVIDE BY 35' WIND SPEED FOR GROUND LEVEL Χ/Q)

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X/Q BY OVERLAY METHOD

A. PROCEDURE

1. Read and record the appropriate T value (last 15 minute value) for the 500 ft to 35 ft interval.

$$\Delta T_{(500-35)} = (\_\_\_\_\_\_\_\_\_\_)\ ^\circ F$$

NOTE: If the 500-35 ΔT is unavailable due to instrument malfunction. Refer to Tab 4 of this EPP/IP for sources of alternate meteorological data. When such data is obtained, determine the equivalent ΔT as follows:

$$(\text{Temperature}_{Elev_h} - \text{Temperature}_{Elev_l}) \times \frac{465}{(Elev_h - Elev_l)} = \Delta T_{(500-35)}$$

$$(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) \times \frac{465}{(\qquad\qquad)} = (\_\_\_\_\_\_\_\_\_\_)\ ^\circ F$$

2. Determine the Pasquill stability class from the following table.

Class			$\Delta T_{(500-35)}$ °F
A	-	Very Stable	$\Delta T < -4.8$
B	-	Moderately Unstable	$-4.8 \leq \Delta T < -4.3$
C	-	Slightly Unstable	$-4.3 \leq \Delta T < -3.8$
D	-	Neutral	$-3.8 \leq \Delta T < -1.3$
E	-	Slightly Stable	$-1.3 \leq \Delta T < 3.8$
F	-	Moderately Stable	$3.8 \leq \Delta T \leq 10.2$
G	-	Very Stable	$10.2 < \Delta T$

Stability Class = ________________

3. Read and record the appropriate wind speed value for the 500 foot level for the same time period used to obtain the ΔT above. If the wind speed at the 500 foot level is unavailable use the wind speed noted at a level reasonably close to the 500 foot level.

$$\text{Wind Speed}_{(500\ foot)} = (\_\_\_\_\_\_\_\_)\ mph$$

4. Obtain the package of meteorological overlays for the type of release (ground level or elevated).

5. From this package, obtain the overlays corresponding to the Pasquill Stability Class determined in Step 2 above.

6. Select the overlay for the windspeed closest to the last fifteen minute average windspeed reported by the Terminet.

7. Place the overlay chosen on the ECC Topographic map with the axis at the point of release and the arrow pointing in the direction <u>from which</u> the wind is <u>coming</u>.

   NOTE: Wind direction is the direction from which the wind is coming measured in degrees closkwise from due north. Use the Unit 1 cooling tower as the center for elevated releases, and the Unit 1 containment for the center of ground level releases.

8. Locate the appropriate X/Q on the overlay and record the value ______________ sec/m^3.

9. Determine the X/Q for other locations/distances as required.

10. Proceed to the appropriate dose projection method.

ALTERNATE METEOROLOGY

The purpose of this tab is to identify alternate sources of meteorology data available in the BVPS environs that can be used in the event that the primary meteorological instrumentation fails.

A. Site Specific Instrumentation

1. The meteorological tower and supporting meteorological instrumentation trailer are located east of the site. Both digital (Terminet) and analog signals are hardwired to the Station. In the event of a failure of the communications links, without failure of the meteorological sensors/computer, meteorological data can be obtained from read-outs located within the meteorological trailer. The Shift Supervisor has custody of a key to this trailer. Since digital and alalog information are separately relayed, failure of the Terminet link will not affect the analog idsplays and vice versa.

2. The Shippingport Atomic Power Station has installed meteorological monitoring equipment. The wind direction, wind speed, and ambient temperature sensors are located (on the SAPS screenwall bridge (735'), and on the ridge south of the station (1135') such that there is approximately 400 feet difference in elevation. These sensors are read in the SAPS Control Room. Access this data by calling the SAPS control room:

PAX Phone	702/710	62102/62110	643-4600
DLC Radio	150 MHZ		

Note that the elevation difference is approximately 400', and that the delta T will need to be corrected before it can be used as described in Tab 2 or Tab 3.

B. Bruce Mansfield

The Bruce Mansfield Power Station maintains two meteorological stations in the environs of that facility. They are located:

° At the Fairview Substation located 1-1/2 miles east of Fairview on Tuscarawas Road. This station has wind speed and wind direction sensors located at approximately 1180'.

° At the Bruce Mansfield Substation located on the hill east of the plant. (adjacent to microwave tower. This station has temperature, wind speed, wind direction, and dew point sensors located at approximately 1250'.

None of the data is telementered to the Bruce Mansfield control room. Thus, BVPS personnel would need to be dispatched to the individual stations to gather this data. The keys to instrument enclosures are availabel through the Bruce Mansfield Control Room which can be contacted at 643-5000 (SWBD), or 643-5005 (direct 24-hrs).

C. US Weather Bureau

The National Weather Service operates a "first-order" weather station at Coraopolis (Moon Twnp). This station can provide meteorological data for the Beaver County Area, and could be called upon to bring tracking ballons to the site for release to assist with plume tracking. An Air Polution Meteorologist is assigned to this station and could assist with release tracking and prediction, if necessary.

NOTE: The National Weather Service will normally report delta-T as "Temperature lapse rate". This is reported in terms of °F per 1000' of elevation. This value must be converted prior to use as described in Tab 2 or 3. The telephone numbers are:

NWS Forecast Office 1-644-2882

NWS Air Polution Meteorologist 1-644-5179

D. Meteorology by Observation

1. Pasquill Stability Class by Observation

1.1 Dispatch an individual to observe the following meteorological conditons depending on the time of day:

1.1.1 Sun strength (strong, moderate, slight)

1.1.2 Nightime cloud cover (>50% cover, <38% cover)

1.1.3 Wind Speed at ground level (See Step 1.3)

1.2 Using Table 1, identify the Pasquill Stability Class.

Wind Speed mph	Daytime Sun Strength Strong	Moderate	Slight	Nightime Thin overcast >50% cover	<38% cover
<4.5	A	A-B	B		
4.5	A-B	B	C	E	F
9	B	B-C	C	D	E
13.5	C	C-D	D	D	D
>13.5	C	D	D	D	D

From Meteorology and Atomic Energy, TID-24190

NOTE

Stability class D is suitable for heavy overcast conditions day or night.

1.3 If the wind speed is not obtainable, the following approximations my be used in lieu of more accurate information.

Class	Observation	Approx. Wind Speed
Calm	Smoke rises vertically	<1 mph
Light Breeze	Smoke drifts, wind vanes don't move	1-3 mph
Slight Breeze	Leaves rustle, wind felt on face, wind vanes move	4-9 mph
Gentle Breeze	Light flags extend, leaves and twigs in constant motion	8-12 mph
Moderate Breeze	Small branches move, dust and dirt stirred up	13-18 mph

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SUPPLEMENTARY METEOROLOGICAL PARAMETERS

A. PURPOSE

This tab identifies interim methodology for determining plume width and transit time, and optionally, plume vertical height. The plume width and plume heights are the dimensions of the plume beyond which the concentration is less than 10% of the plume centerline value. Since ground level dose is proportional to concentration, the dose drops off to less than 10% of the peak centerline value beyond these maximum dimensions. Transit time (relative to the ground) is based on the actual wind speed.

B. PROCEDURE

1. Plume Width

1.1 Using the methodology of Tab 1,2,3, or 4, determine the Pasquill Stability Class.

1.2 Using Attachment 1, locate the stability class line and the downwind distance of interest. Read plume width.

1.3 Repeat steps 1.1 and 1.3 for other areas of interest.

2. Plume Height

2.1 Perform steps 1.1 through 1.3 using Attachment 3

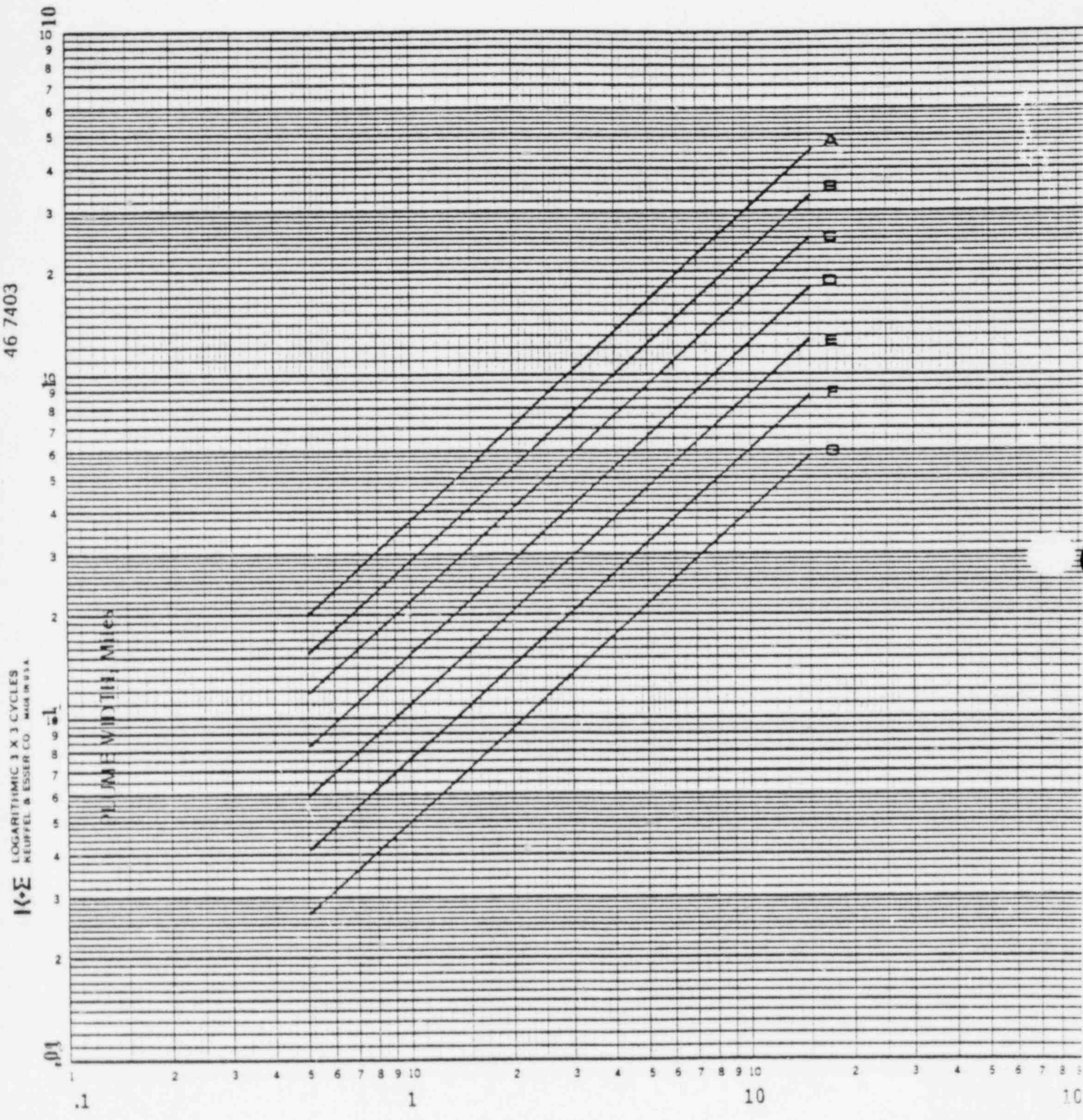
3. Transit Time

3.1 Determine the current wind speed from the Terminet or from the analog recorders.

3.2 Using Attachment 2, locate the wind speed line and downwind distance of interest. Interpolate as necessary. Read transit time.

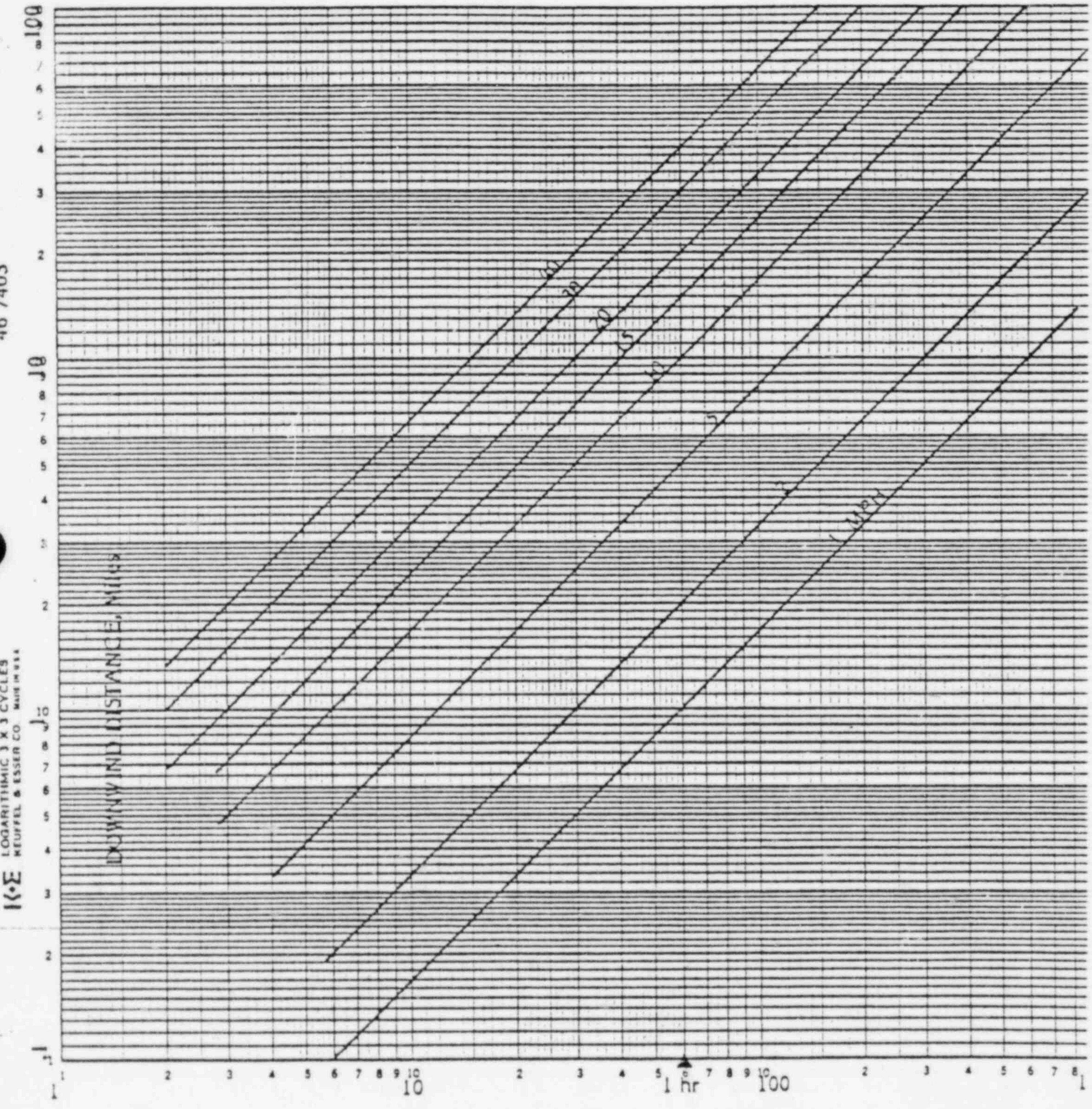
3.3 Repeat steps 3.1 and 3.2 for other areas of interest.

PLUME WIDTH VS DOWNWIND DISTANCE *

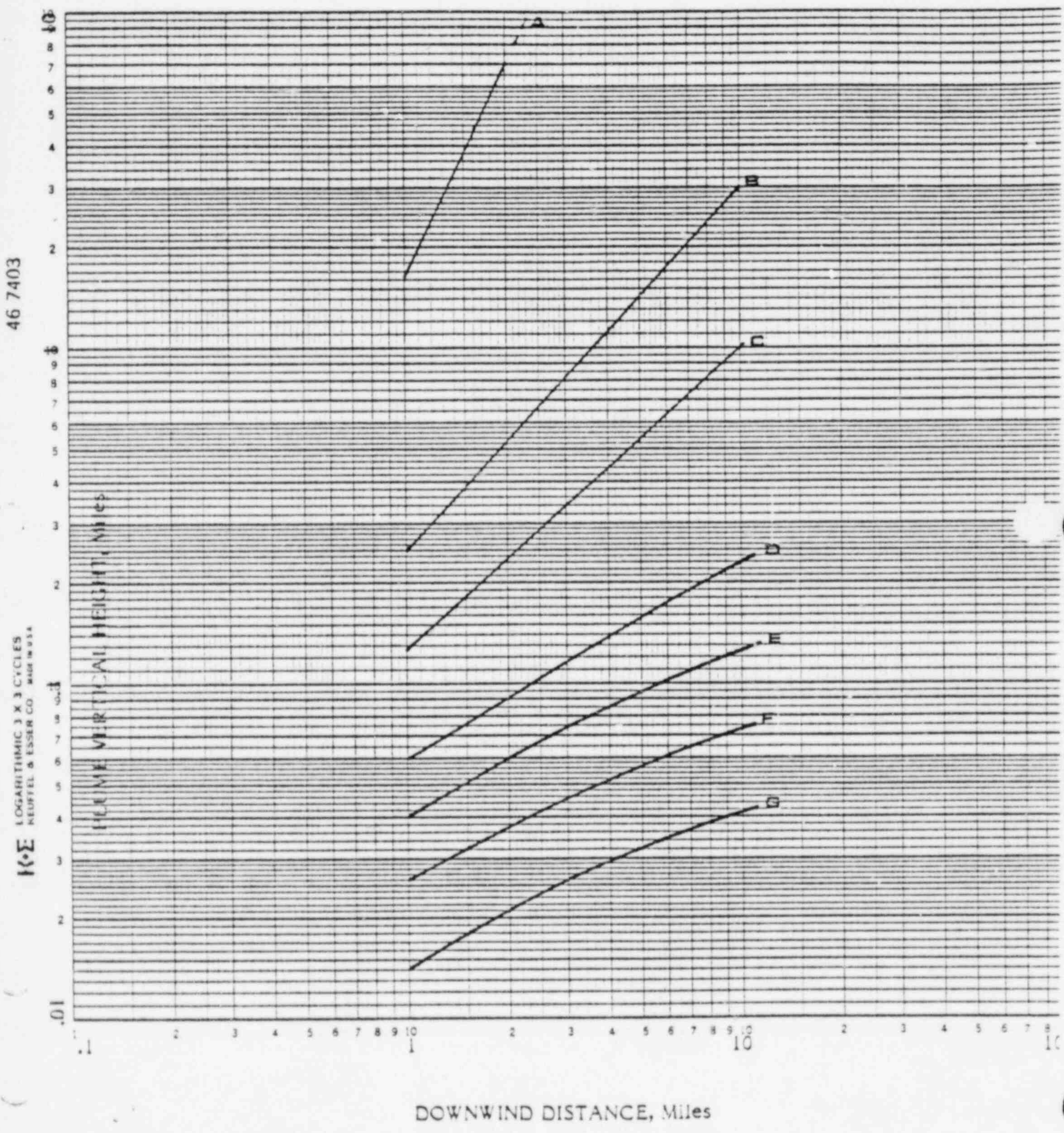


*Beyond which the concentration is less than 10% of the plume centerline concentration.

PLUME TRANSIT TIME VS WIND SPEED



PLUME VERTICAL HEIGHT VS DISTANCE *



*Beyond which the concentration is less than 10% of the plume centerline concentration.

DOSE PROJECTION BY HAND CALCULATION BASED ON FSAR ACCIDENT

A. PREREQUISITES

The following must be available for this method:

1. Source of Release (type of accident)
2. Meteorology information

B. PROCEDURE

1. Classify the type of accident which has occurred from the accidents identified on the worksheet. If no accident classification can be be made, choose the fuel handling accident.
2. Obtain a copy of the worksheet.
3. If not already done, enter the distance at which the whole body and thyroid doses are to be calculated in the spaces provided on the worksheet.
4. From the X/Q worksheet (EPP/IP-2.6 Tab 2; EPP/IP-2.6.1 Attachment 1), transfer the X/Q value for the desired downwind distance in the appropriate space on the worksheet.
5. Multiply the X/Q value by the correction factor for that accident, for both whole body and child thyroid dose (if applicable), to obtain the projected dose rate at the EAB. Enter the projected dose(s) in the space(s) provided.
6. For each additional distance to be calculated, enter the distance (if not already entered) at which the whole body and thyroid doses are to be calculated and enter the appropriate dose factor in the spaces provided on the worksheet. Repeat steps 4 and 5 for each additional distance. Use the reverse side of the form for any additional distances.
7. Enter the date, time, and initials of the person who performed the calculation in the spaces provided. Retain this form for subsequent review and evaluation.

8. If the thyroid dose to another age group is desired, multiply the child thyroid dose by the appropriate conversion factor below, otherwise ignore this step. (Child thyroid dose is reported to state and local authorities, and protective actions are based on the child thyroid values.)

Accident	Multiply Child Thyroid Dose by: Adult	Teen	Infant
Main Steam Line Break	0.69	0.86	0.92
Fuel Handling Accident	0.73	0.90	0.91
LOCA	0.67	0.85	0.92
S/G Tube Rupt.	0.69	0.86	0.92

Duquesne Light

Date: ____________________

Time: ____________________

Name: ____________________

	ACCIDENT	X/Q [1]		Dose Factor Whole Body Child Thyroid		DOSE, rem Whole Body Child Thyroid
SITE BOUNDARY (EAB, .38 mi)	Volume Control Tank Rupture		X	1.99 E1 Negligible	=	 negligible
	Gas Surge Tank Rupture		X	1.68 Negligible	=	 Negligible
	S/G Tube Rupture		X	1.42 E2 1.69 E3	=	
	Main Steam Line Break		X	2.87 E-2 2.3 E2	=	
	Fuel Handling Accident		X	1.12 E4 1.87 E5	=	
	Loss of Coolant Accident		X	2.8 E3 8.25 E4	=	
	DISTANCE	**X/Q [1]**		**Dose Factor [2]** Whole Body Child Thyroid		**DOSE, rem** Whole Body Child Thyroid
	2 Mile		X		=	
	5 Mile		X		=	
	10 Mile		X		=	
	Other _____ miles		X		=	

[1] From TAB 2

[2] From blocks above.

Date: ____________

Time: ____________

Name: ____________

DISTANCE	X/Q[1]		Dose Factor[2] Whole Body / Child Thyroid		DOSE, rem Whole Body / Child Thyroid
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	

1. From EPP/IP-2.6 Tab 2; EPP/IP-2.6.1 Attachment 1
2. From front

DOSE PROJECTION BASED ON MONITOR READINGS

A. PREREQUISITES

The following data must be available for this method:

1. Source of release (type of accident)
2. Effluent monitor reading (RM-GW-108B, -VS-101B, -VS-107B, -GW-110, -VS-111, and/or -VS-112), in cpm.
3. Effluent flow rate (FR-GW-108, -VS-101, and/or -VS-112), in cfm.

-or-

4. Steam generator relief valve release rate (RM-MS-100 A,B,C/RM-MS-101), in cpm, or RASMOS print-out of uCi/sec.

NOTE

The result of this calculation is a dose rate, which when multiplied by the release time results in a projected dose. It is highly unlikely that the monitor count rate, in cpm, will remain constant through-out the release period. For this reason, it will be necessary to periodically repeat this calculation as the count rate changes. The sum of these individual calculated projected doses is the projected integrated dose for the release. Avoid calculating doses on the basis of monitor spikes, unless the spike lasts long enough to have a significant release time associated with it. Average monitor readings are preferable in order to avoid over-conservative results.

B. DISCUSSION

This tab provides a method to convert monitor reading into projected offsite dose for several postulated accidents. The release rate, in Ci/sec, is determined first from monitor readings and effluent path flow rate. Graphs for this conversion are provided for the various classes of accidents and monitors available. Once the release rate is known, graphs of dose rate versus X/Q and release rate for the analyzed accidents convert the release rate to dose rate. For those analyzed accidents where radioiodine constitutes a significant portion fo the release, two graphs are provided--one for whole body, and another for child thyroid. Conversion factors within this procedure convert child thyroid dose to adult, teenager, and infant thyroid dose, should this be desired. The worksheets provide the numerical conversion factors upon which the graphs were based, and if the user prefers, these may be used in lieu of the graphs determine projected dose.

C. PROCEDURE

If the graphical method is to be used, proceed to step 15, otherwise proceed as follows:

1. Classify the type of accident which has occurred from the accidents identified on the worksheet. If no accident classification can be made, choose the fuel handling accident. If fuel damage is suspected, use the LOCA conversions, regardless of the release pathway or initiating accident.

2. Obtain a copy(s) of the worksheet appropriate to the calculation. There are three different worksheets and copies of each are available in the emergency cabinets in the NSS office and EA & DP area.

   2.1 Attachment 24 For use with RM-VS107/GW108
   2.2 Attachment 25 For use with RM-VS112/GW110 (LR)
   2.3 Attachment 26 For use with RM-VS112/GW110 (HR)
   2.4 Attachment 28 For use with RM-MS-100 A,B,C/RM-MS-101/RASMOS

   The above four worksheets have the appropriate conversion factors pre-printed on the form. The form below is a general form, without the pre-printed data, which can be used as a continuation to one of the forms above.

3. If not already done, enter the distance at which the whole body and thyroid doses are to be calculated in the spaces provided on the worksheet.

NOTE

The monitor and dose conversion factors are both based on the FSAR postulated source term for each particular accident. If release rates in Ci/sec or similar terms, either gross or isotopic, become available from other indications or methods (ie: REOP-1.1), Tab 8 should be used to project dose commitment.

4. Record the actual count rate on the indicated monior in block A on the worksheet.

5. Record the actual release flow rate (cfm) as indicated on the specified instrument in block. If the flow rate is not immediately avaliable, assume the follow flow rates (based on test data):

Process Vent (GW-108)	1000 CFM
Ventilation Vent (VS-101)	60,000 CFM
Rx Vent & SLCS Vent (normal line-up)(VS-107)	33,500 CFM
Rx Vent & SLCS Vent (Emerg. line-up)(VS-107)	42,500 CFM

6. Transfer the X/Q value applicable to the present meteorological conditions and the dose point of interest from the X/Q worksheet (Tab 2 Attachment 1-EPP/IP-2.6.1 Attachment 1). Record this value in block e.

7. From the table on the worksheet, enter the appropriate monitor cpm to release rate conversion factor in block c.

8. Multiply the observed monitor reading (block. a) by the release flow rate (block b). Multiply the result by the conversion factor (block c), and record the release rate in block d.

9. From the table on the worksheet, enter the applicable dose conversion factors in the appropriate block f -- the upper value for whole body, the bottom value for the child thyroid.

10. Multiply the calculated release rate (block. d) by the observed X/Q (block. e). Multiply this result by the whole body dose factor (block f top) and record the dose rate in block g (top).

11. Multiply the block (d) x (e) value by the child thyroid dose factor (block f lower) and record the result in block h (lower).

12. Determine, or project, the duration of the release at the current release rate. Record this value on the worksheet in block h. If a reasonable estimate of the duration is unknown, use one hour for the initial projection, and update the projection appropriately as better data becomes available.

13. Multiply the individual dose rate(s) (block g) by the release duration (block h), and record the projected dose(s) in block i.

14. If the dose commitments for other downwind distances are desired for the same instrument readings, repeat steps 6 through 13, using the spare blocks, for each additional distance desired. If the instrument readings change, obtain a new worksheet, and rework the solution completely.

    14.1 If the thyroid dose to another age group is desired, multiply the child thyroid dose by the appropriate conversion factor below, otherwise proceed to step 18. (Child thyroid dose is reported to state and local authorities, and protective actions are based on the child thyroid values).

Accident	Multiply Child Thyroid Dose by: Adult	Teen	Infant
Main Steam Line Break	0.69	0.86	0.92
Fuel Handling Accident	0.73	0.90	0.91
LOCA	0.67	0.85	0.92
S/G Tube Rupt.	0.69	0.86	0.92

15. If the graphs are to be used, proceed as follows:

    15.1 Locate the graphs associated with the identified accident and remove them from the procedure book. Each graph is marked on the upper right hand corner with the name of the accident to which it applies and/or the monitor to which it applies. The table below can be used as a guide.

    15.1.1 If the accident is a steam generator tube rupture, first determine the Ci/sec release rate using Radcon Emergency Operating Procedure REOP-1.2, "Emergency Use of the Atmospheric Steam Relief Effluent Monitoring System."

Accident Type	Monitor to Ci/Sec Monitor	Graph	Ci/sec to Dose Rate Organ	Graph
Volume Control Tank Rupture	VS-107	Att. 1	Whole Body	Att. 14
	VS-112 L/R	Att. 7		
	VS-112 H/R	Att. 13		
Gas Surge Tank Rupture	VS-107	Att. 2	Whole Body	Att. 15
	VS-112 L/R	Att. 8		
	VS-112 H/R	Att. 13		
Main Steam Line Break	VS-107	Att. 3	Whole Body	Att. 16
	VS-112 L/R	Att. 9	Child Thyroid	Att. 19
	VS-112 H/R	Att. 13		

Accident Type	Monitor to Ci/Sec Monitor	Graph	Ci/sec to Dose Rate Organ	Graph
Fuel Handling Accident	VS-107	Att. 4	Whole Body	Att. 18
	VS-112 L/R	Att. 10	Child Thyroid	Att. 21
	VS-112 H/R	Att. 13		
Loss of Coolant Accident	VS-107	Att. 5	Whole Body	Att. 17
	VS-112 L/R	Att. 11	Child Thyroid	Att. 20
	VS-112 H/R	Att. 13		
Waste Gas Decay Release	GW-108	Att. 6	Whole body	Att. 15
	GW-110 L/R	Att. 12		
	GW-110 H/R	Att. 13		
Steam Generator Tube Rupture	MS-100 A,B,C	Att. 28	Whole Body	Att. 28
	MS-101/RASMOS	Att. 28	Child Thyroid	Att. 28

15.2 Locate the monitor to release rate conversion graph for the monitor of interest.

15.3 On the left vertical axis, locate the monitor reading, in cpm. Sight across the graph to the oblique line associated with the observed flow rate. Interpolate between lines if necessary. Sight down to the lower horizontal axis and read off the release rate, in Ci/sec. Record this value on the worksheet in block d.

15.3.1 If the monitor reading cannot be read on the left vertical axis, locate the reading on the right vertical axis, sight across to the flow rate, and then upwards to the upper horizontal axis. The bent arrows located adjacent to the vertical axis indicate which horizontal axis is associated with that vertical axis.

15.3.2 If the release rate cannot be read off the graph, the Ci/sec per cpm per cfm conversion factor is provided on the lower left hand corner of each graph.

15.3.3 Attachment 13 provides for all accident conditions. For this graph, it will be necessary to correct the indicated Ci/sec result by the actual flow rate. In addition, some of the accident lines provide multipliers by which the indicated Ci/sec should be multiplied for that particular accident. The conversions are:

$$\text{Corrected Ci/sec} - \text{Graph Ci/sec} \times \text{Accident Multiplier} \times \frac{\text{Actual flow rate}}{\text{Graph flow rate *}}$$

*From upper right hand corner of graph.

15.4 Locate the release rate to whole body dose rate conversion graph.

15.5 On the left vertical axis (paper short way up), locate the release rate in Ci/sec. Sight across to the oblique line associated with the horizontal axis and read off dose rate, in rem/hour. Record this value on the worksheet in block g in the top row. Refer to steps 15.3.1 and 15.3.2 if the desired values can not be found on the graphs.

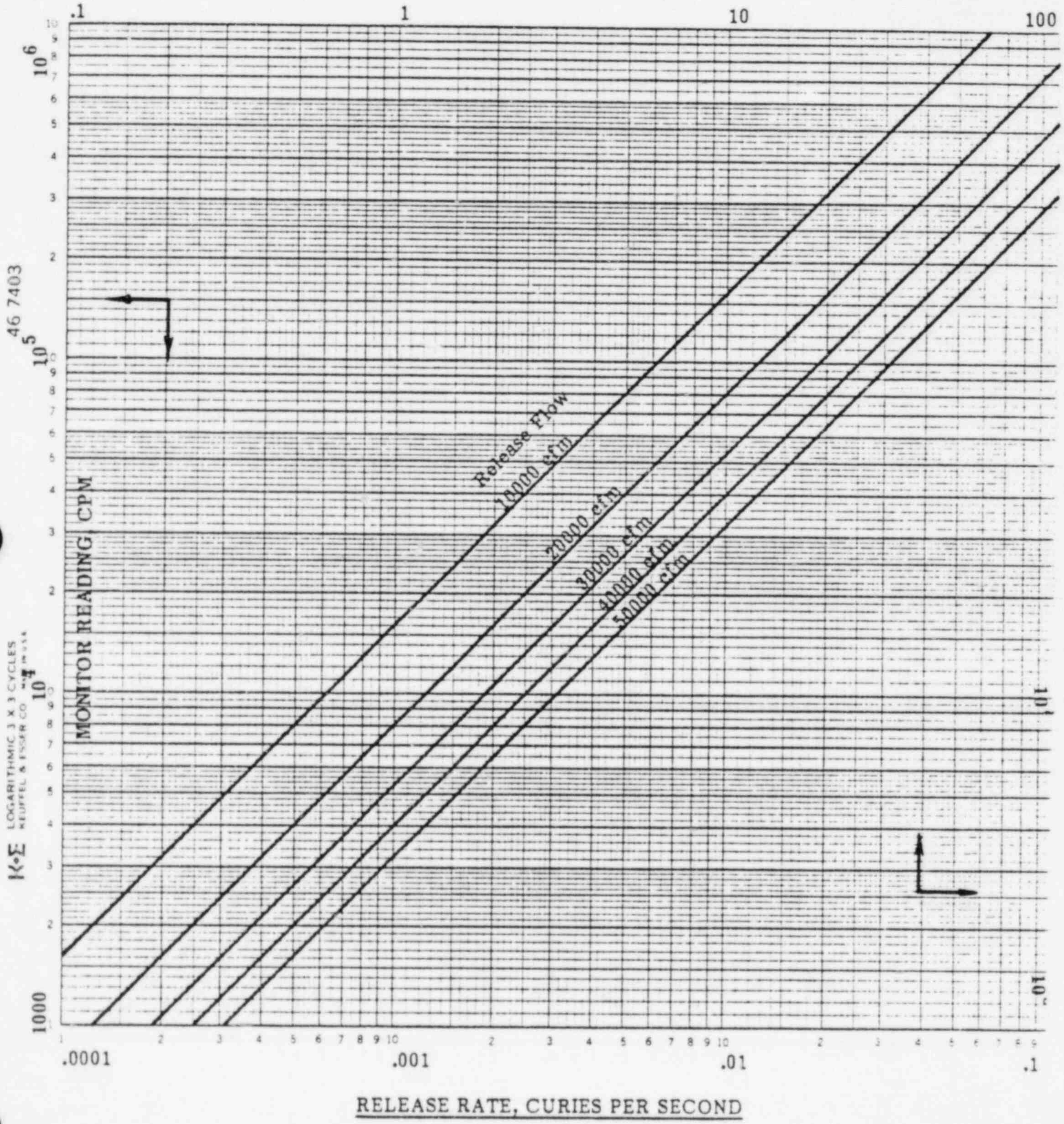
15.6 Repeat steps 15.4 and 15.5 using the graph for thyroid dose if applicable to the accident of interest, recording the result in block g in the bottom row.

15.7 Complete the worksheet as described in steps 12 through 14.

MONITOR CPM TO NOBLE GAS Ci/Sec

Volume Control Tank Rupture

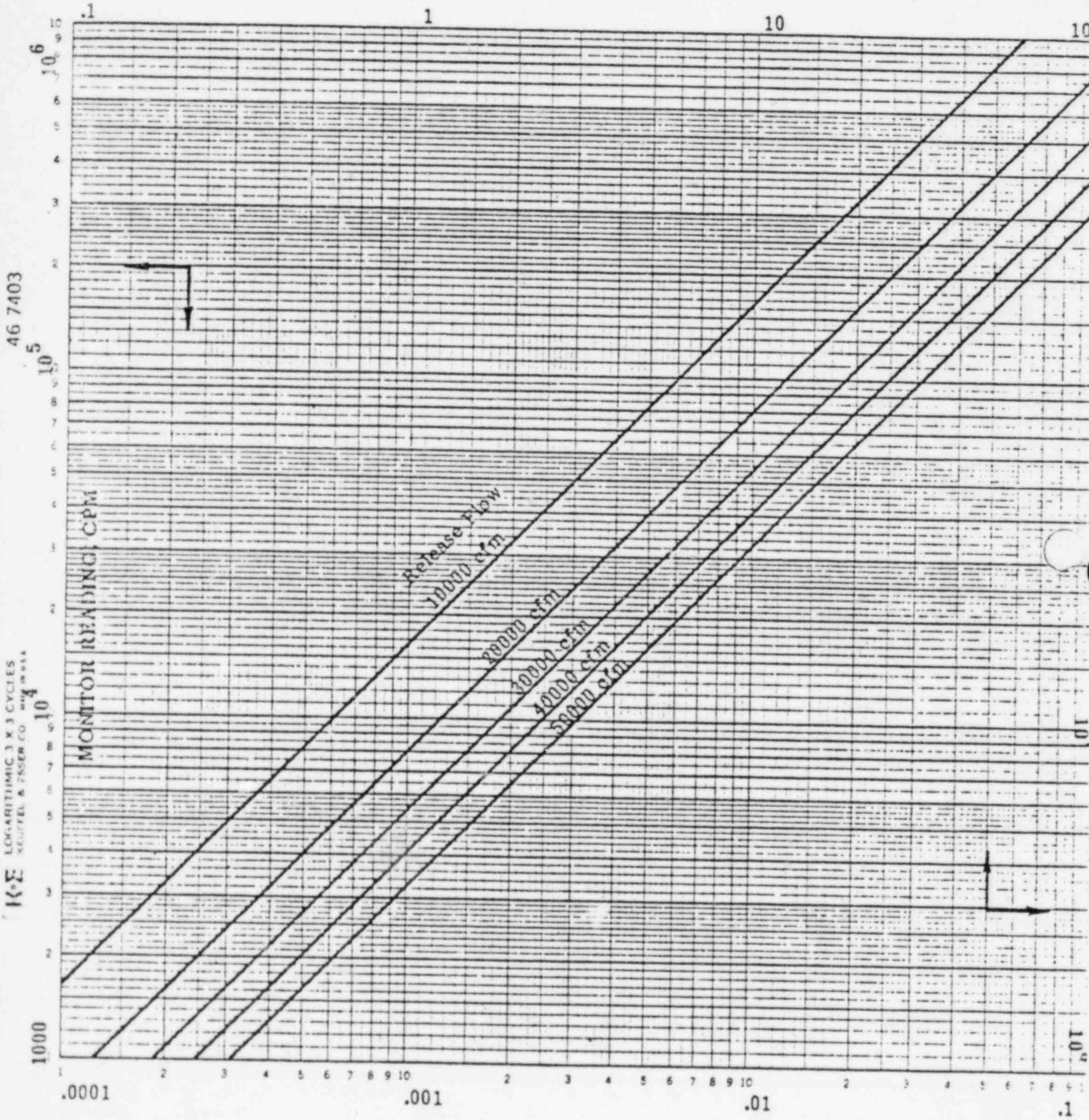
Monitor: RM-VS-107



k = 6.19E-12 Ci/sec-cpm-cfm

MONITOR CPM TO NOBLE GAS Ci/Sec

Gas Surge Tank Rupt-
Monitor: RM-VS-



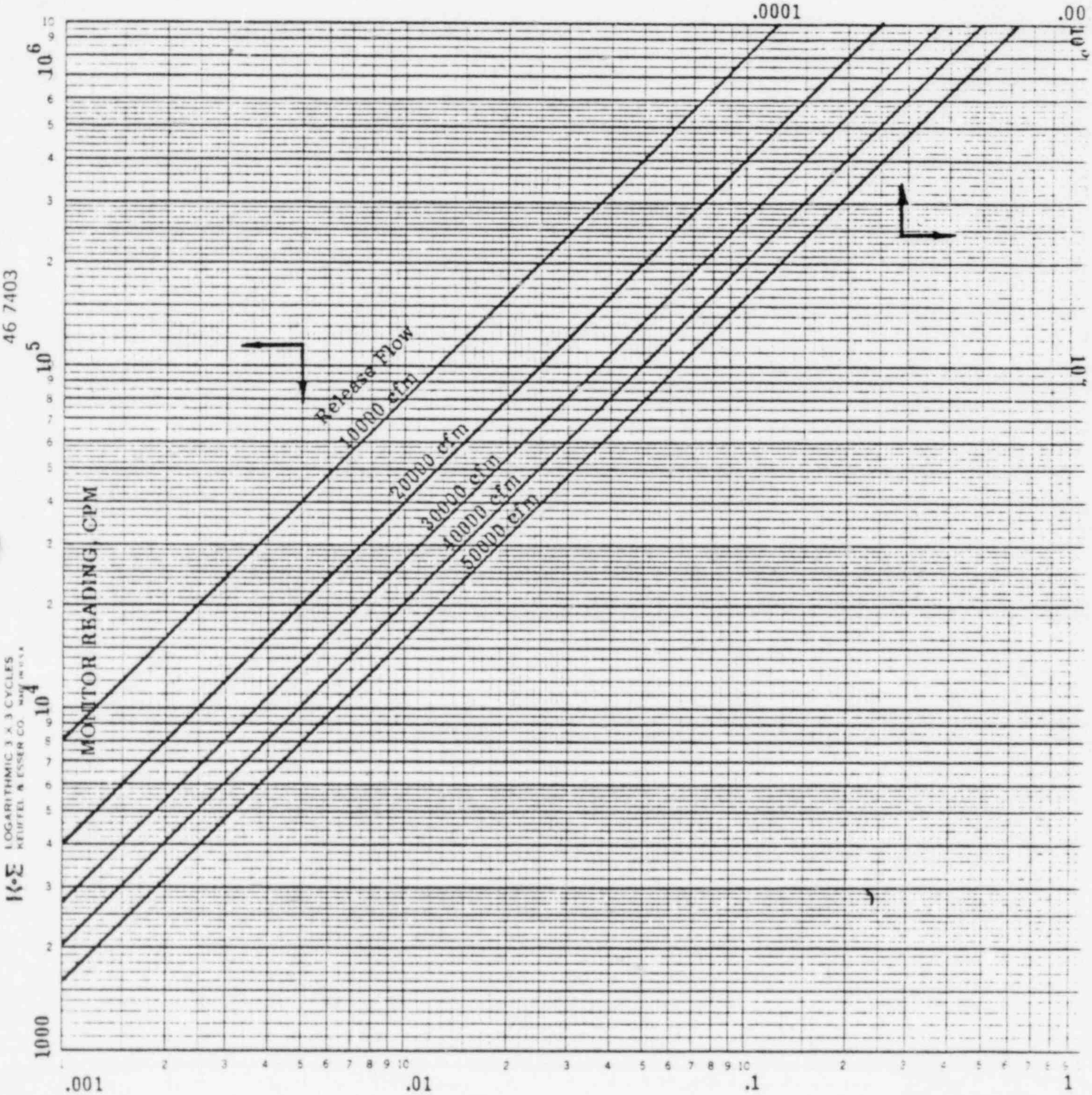
RELEASE RATE, CURIES PER SECOND

k = 6.13E-12 Ci/sec-cpm-cfm

MONITOR CPM TO NOBLE GAS Ci/Sec

Main Steam Line Break

Monitor: RM-VS-107

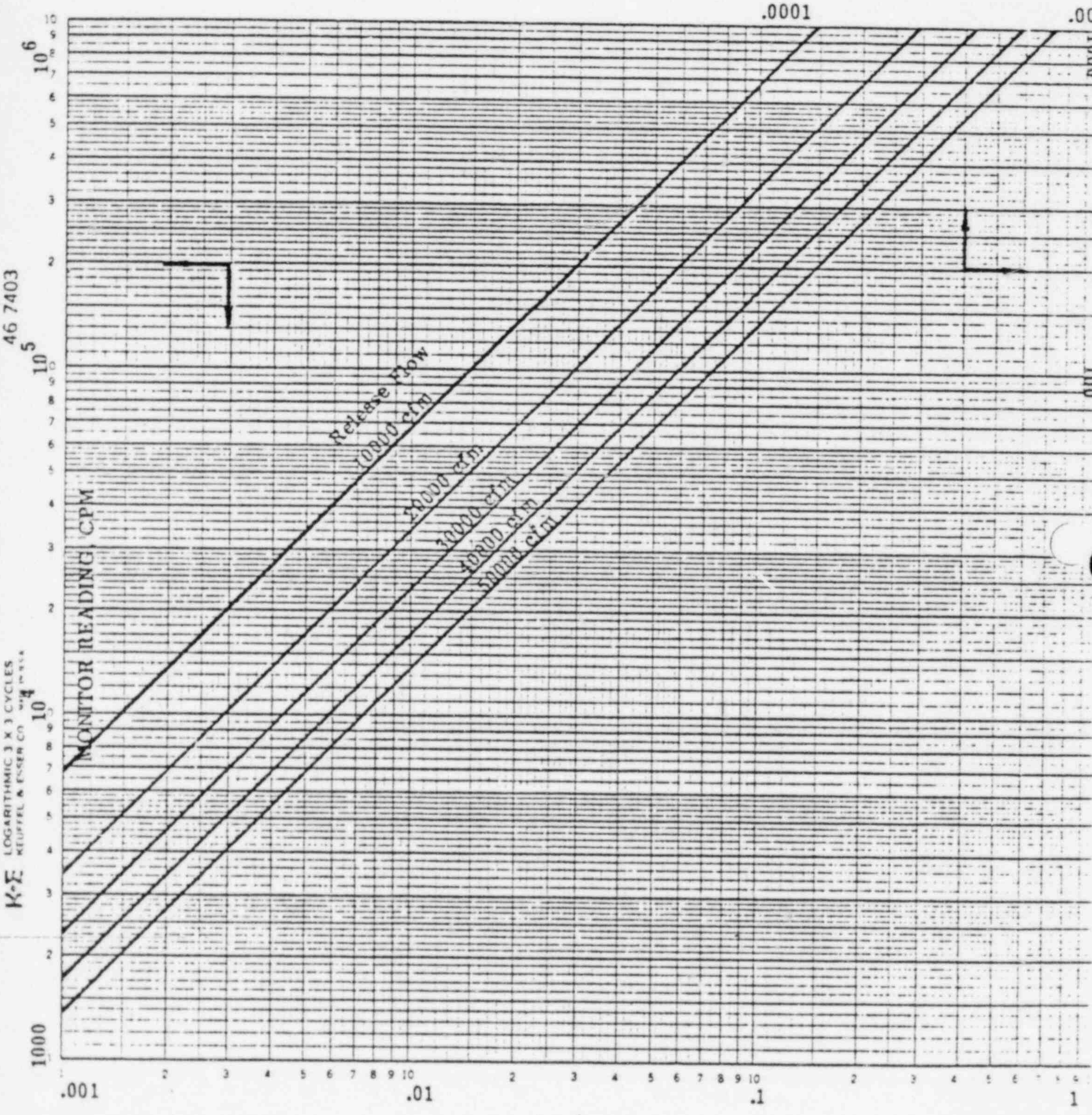


k = 1.24E-11 Ci/sec-cpm-cfm

MONITOR CPM TO NOBLE GAS Ci/Sec

Fuel Handling Accide

Monitor: RM-VS-1

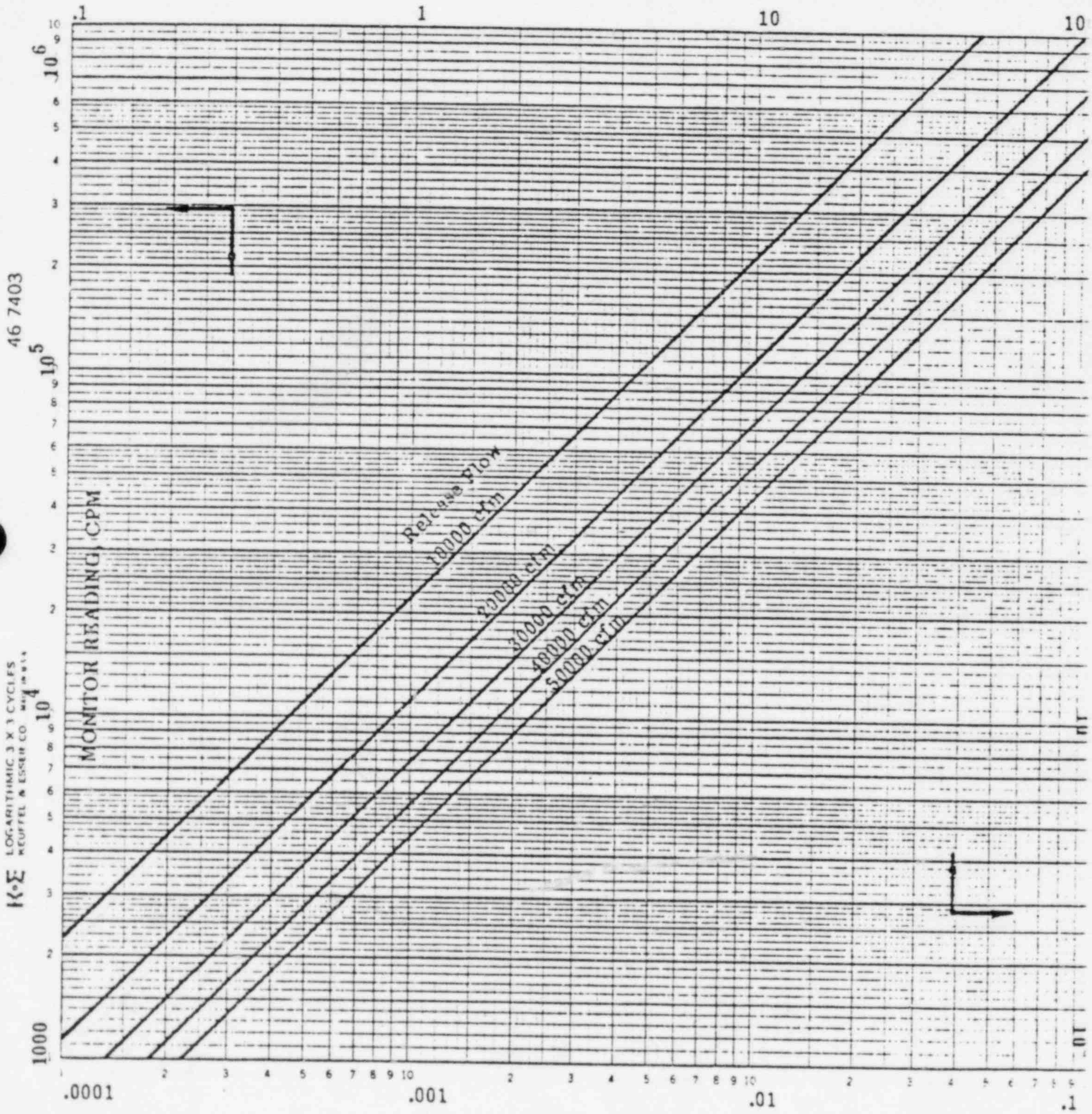


k = 1.47E-11 Ci/sec-cpm-cfm

MONITOR CPM TO NOBLE GAS Ci/Sec

Loss of Coolant Accident

Monitor: RM-VS-107

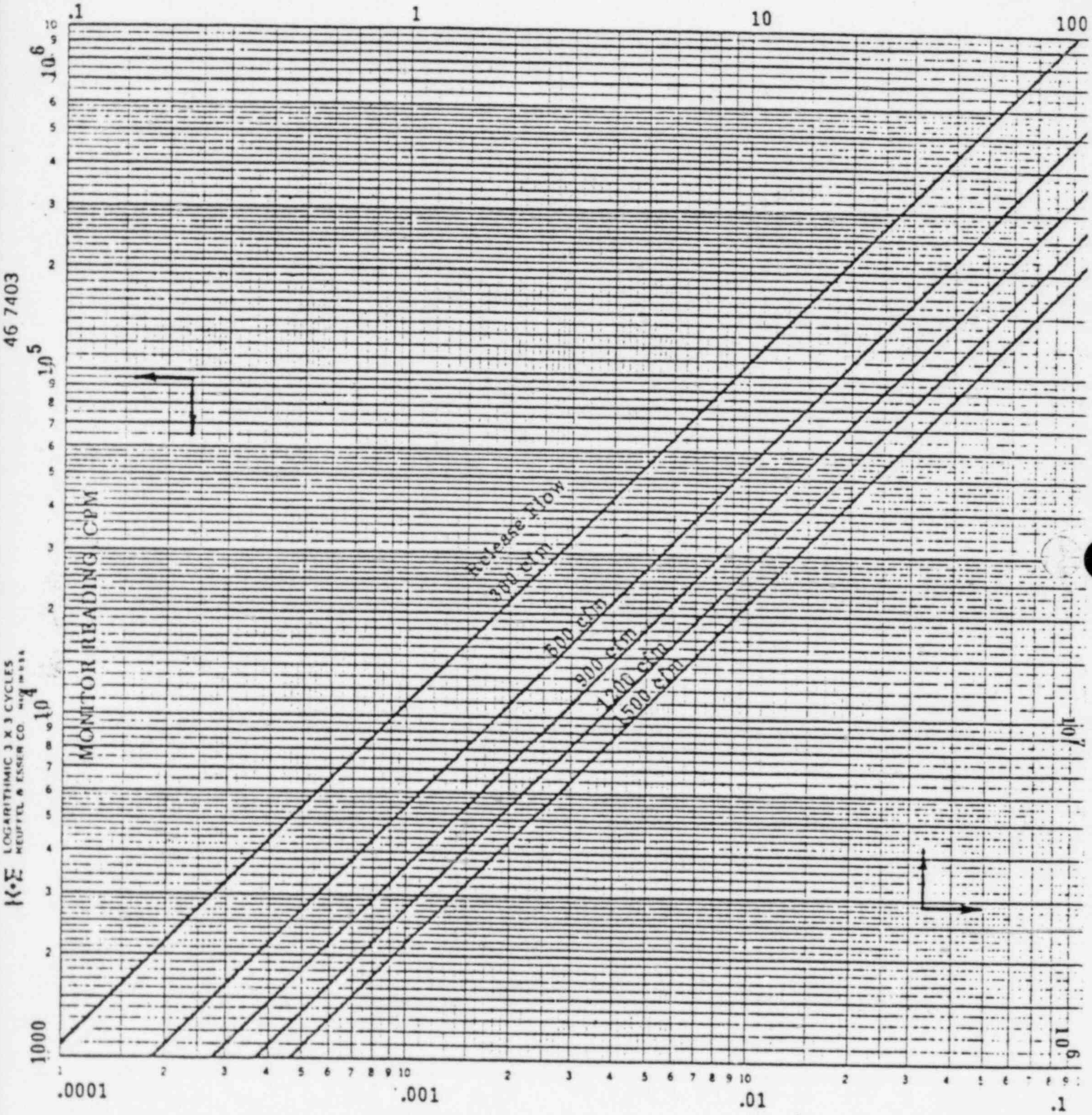


RELEASE RATE, CURIES PER SECOND

k = 4.5E-12 Ci/sec-cpm-cfm

Attachment 6

MONITOR CPM TO NOBLE GAS Ci/Sec
Waste Gas Decay Tank Releas
Monitor: RM-GW-1



RELEASE RATE, CURIES PER SECOND

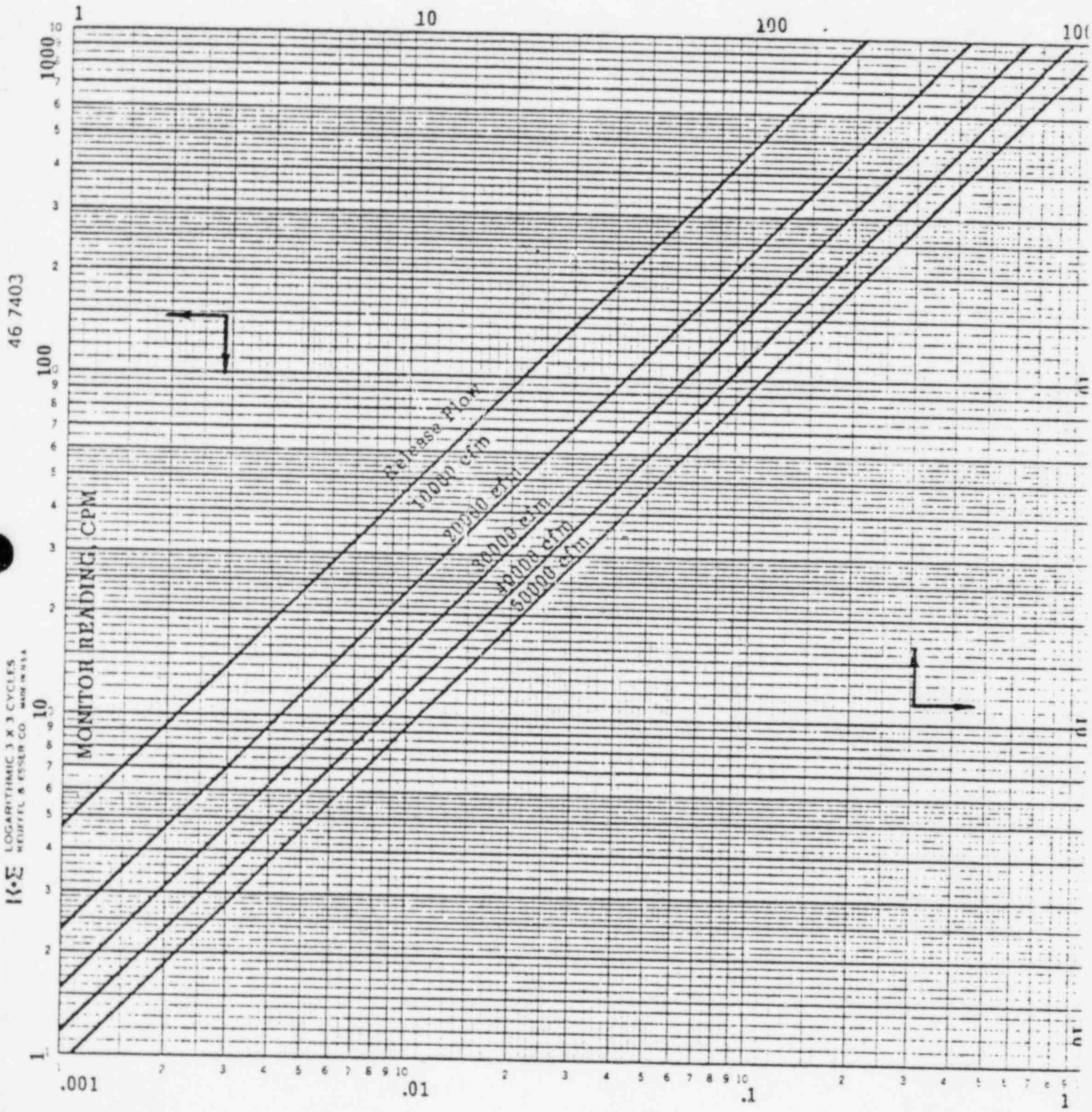
k = 3.05E-10 Ci/sec-cpm-cfm

Attachment 7

MONITOR CPM TO NOBLE GAS Ci/Sec

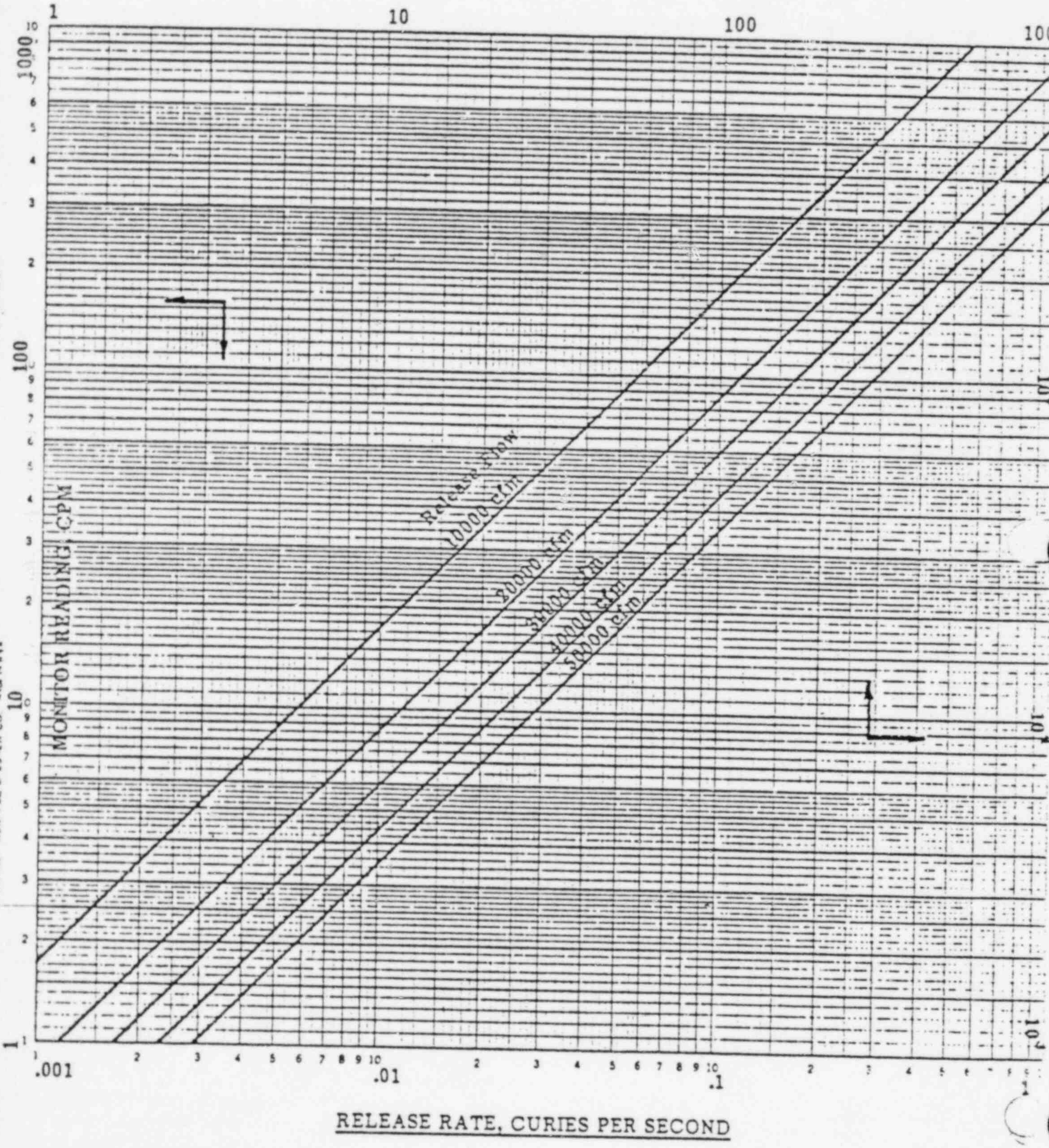
Volume Control Tank Rupture

Monitor: RM-VS-112 Low Range



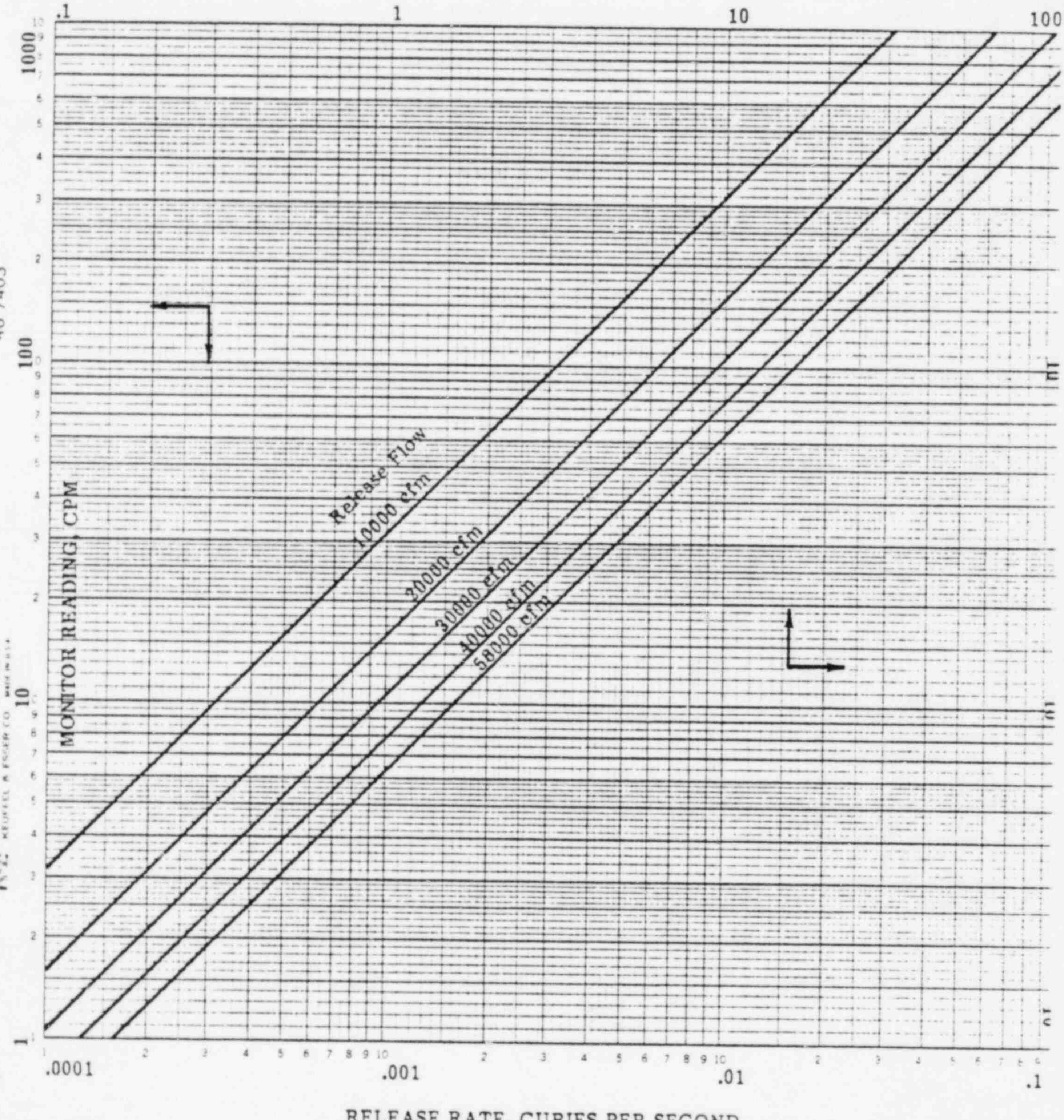
k = 2.12E-8 Ci/sec-cpm-cfm

MONITOR CPM TO NOBLE GAS Ci/Sec
Gas Surge Tank Ruptur
Monitor: RM-VS-112 Low Ran



k = 5.71E-8 Ci/sec-cpm-cfm

MONITOR CPM TO NOBLE GAS Ci/Sec
Main Steam Line Break
Monitor: RM-VS-112 Low Range

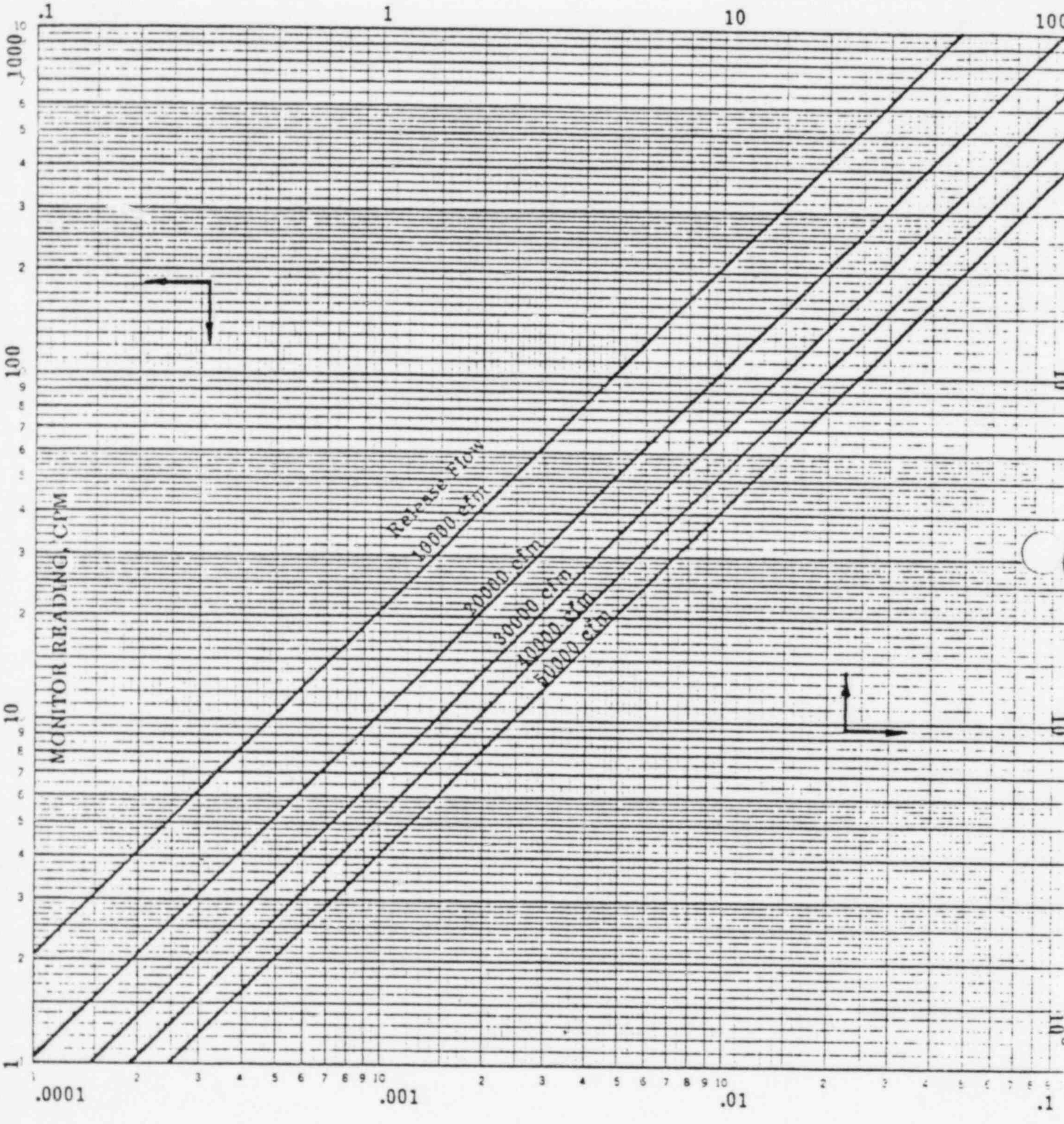


k = 3.17E-9 Ci/sec-cpm-cfm

MONITOR CPM TO NOBLE GAS Ci/Sec

Fuel Handling Acciden[illegible]

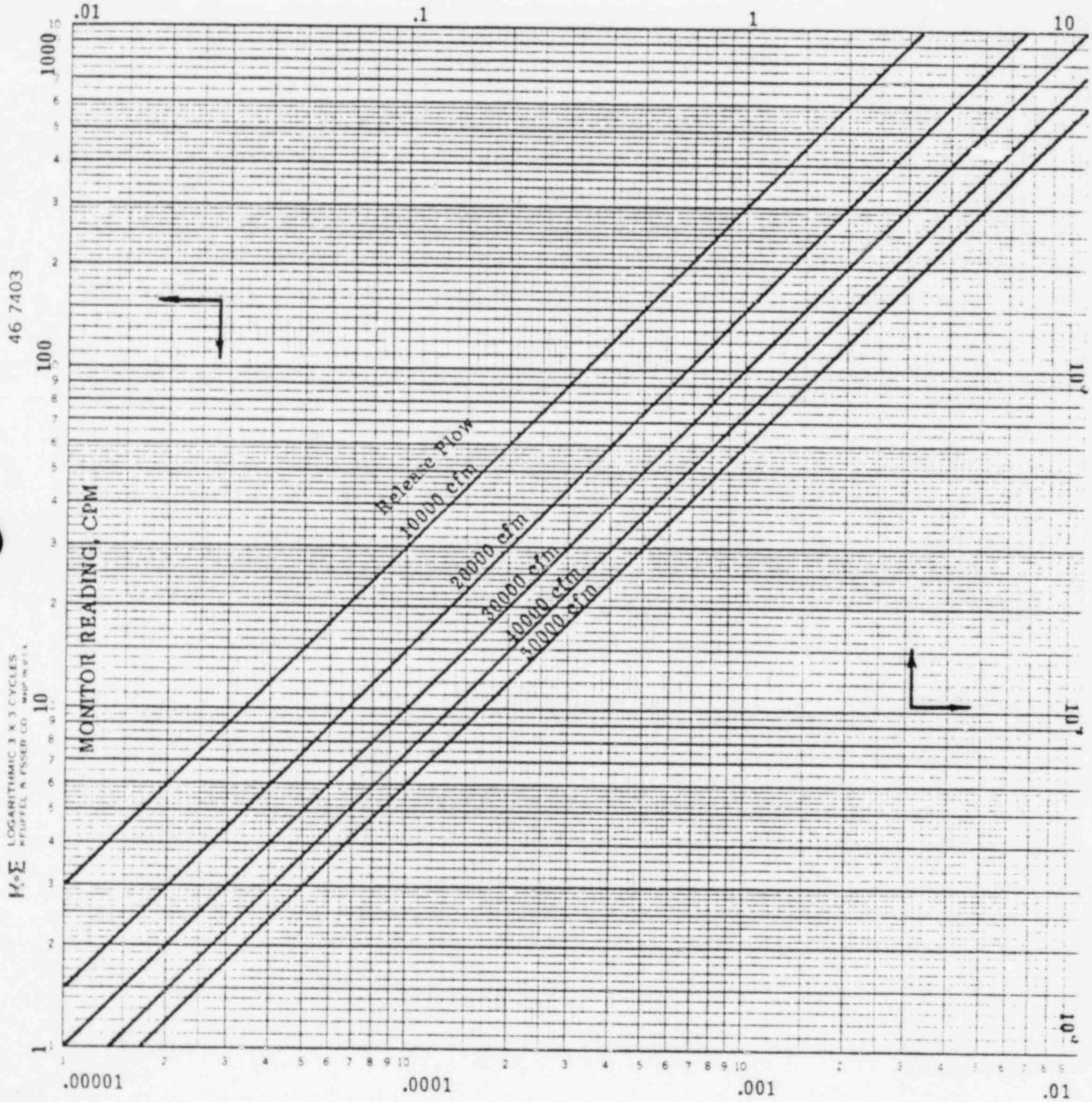
Monitor: RM-VS-112 Low Ran[illegible]



k = 4.77E-9 Ci/sec-cpm-cfm

MONITOR CPM TO NOBLE GAS Ci/Sec

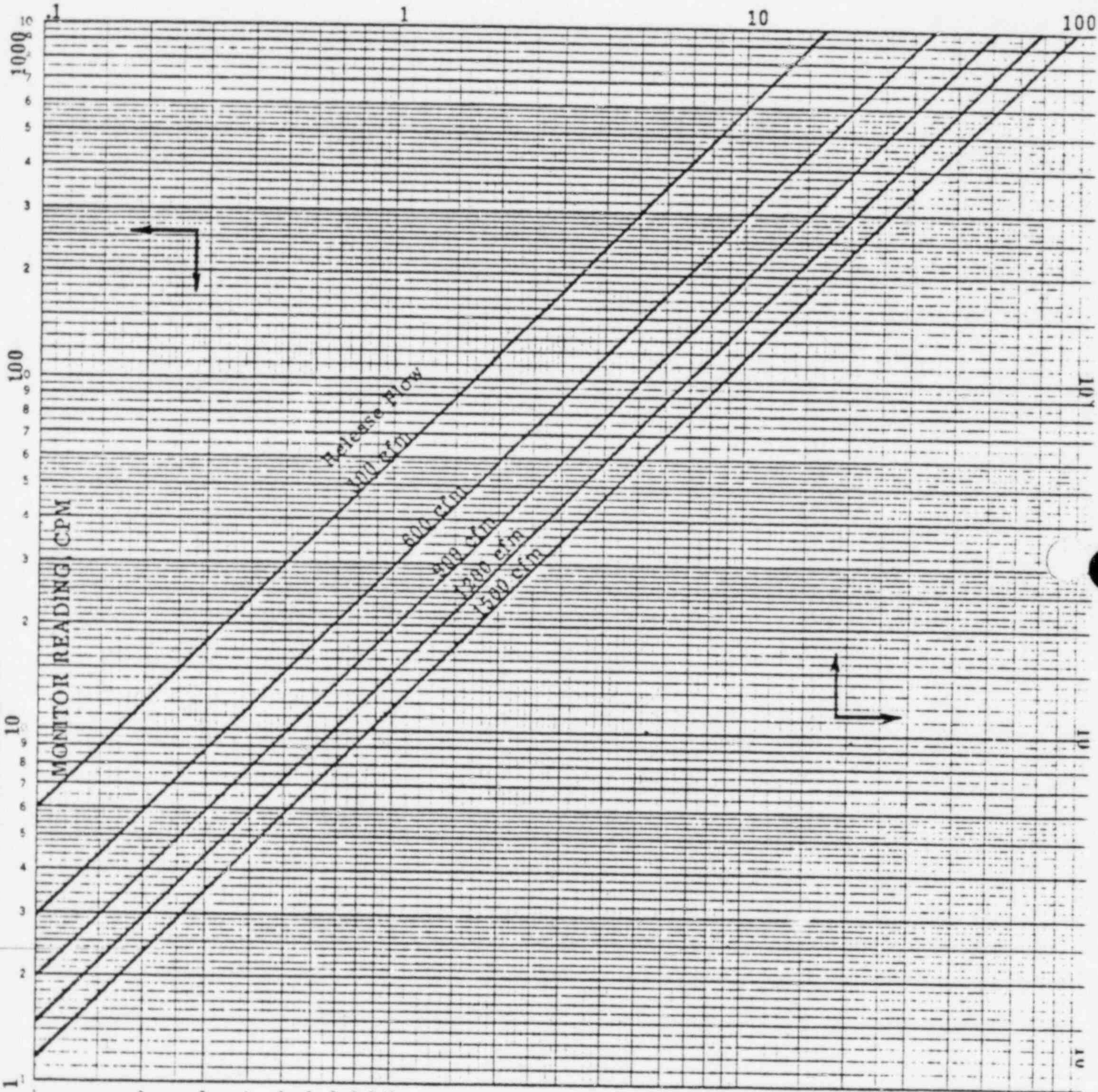
Loss of Coolant Accident
Monitor: RM-VS-112 Low Range



RELEASE RATE, CURIES PER SECOND

k = 3.32E-10 Ci/sec-cpm-cfm

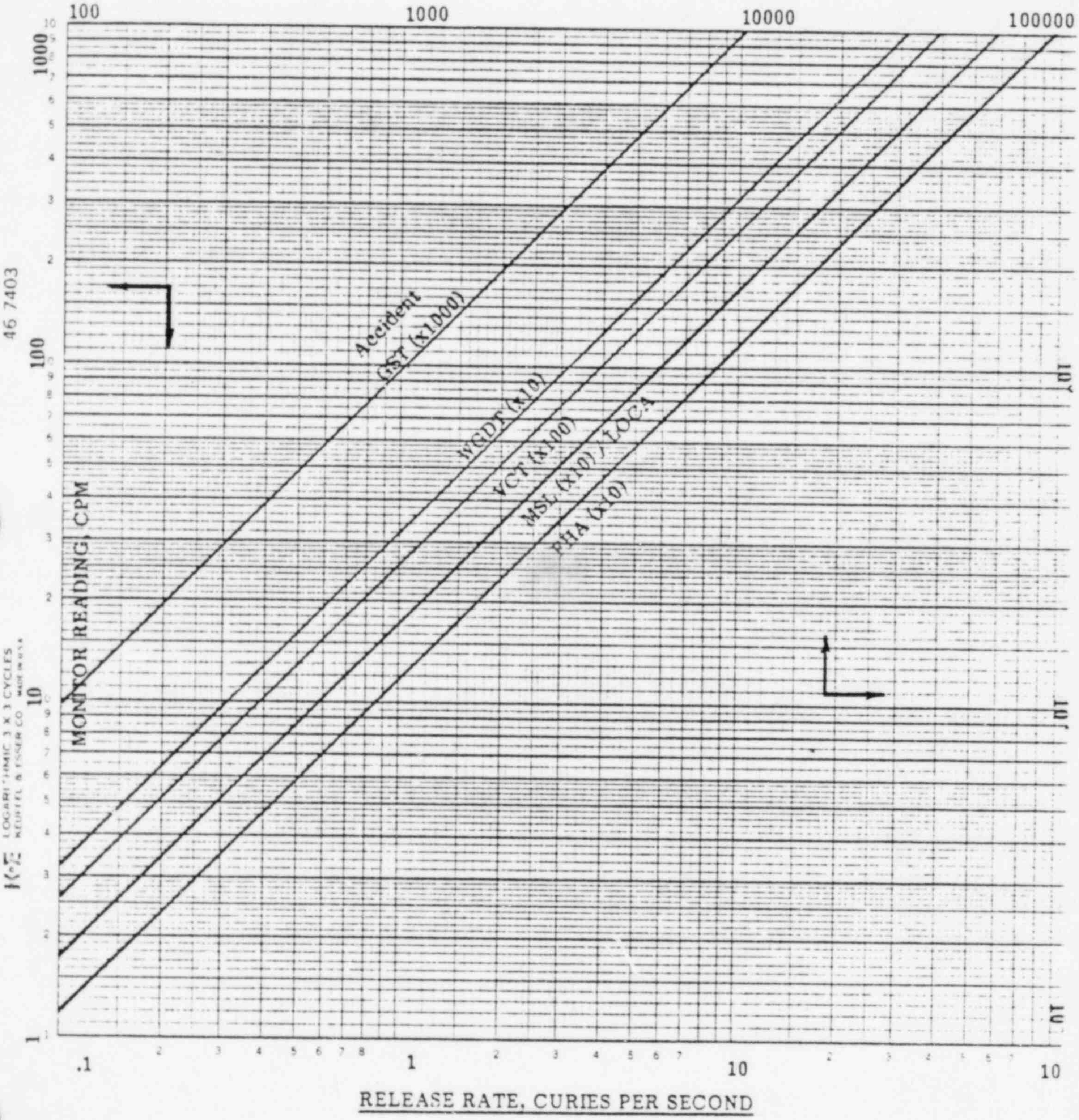
MONITOR CPM TO NOBLE GAS C'/Sec
Waste Gas Decay Tank Relee
Monitor: RM-GW-110 Low Ran



RELEASE RATE, CURIES PER SECOND

k = 5.71E-8 Ci/sec-cpm-cfm

MONITOR CPM TO NOBLE GAS Ci/Sec
All Accidents
Monitor: RM-VS-112/GW-110 High Range
Flow: 50000/1500 cfm



Multiply Ci/sec by:
1000 for GST Rupture
100 for VCT Rupture
10 for WGDT/FHA/MSL Break

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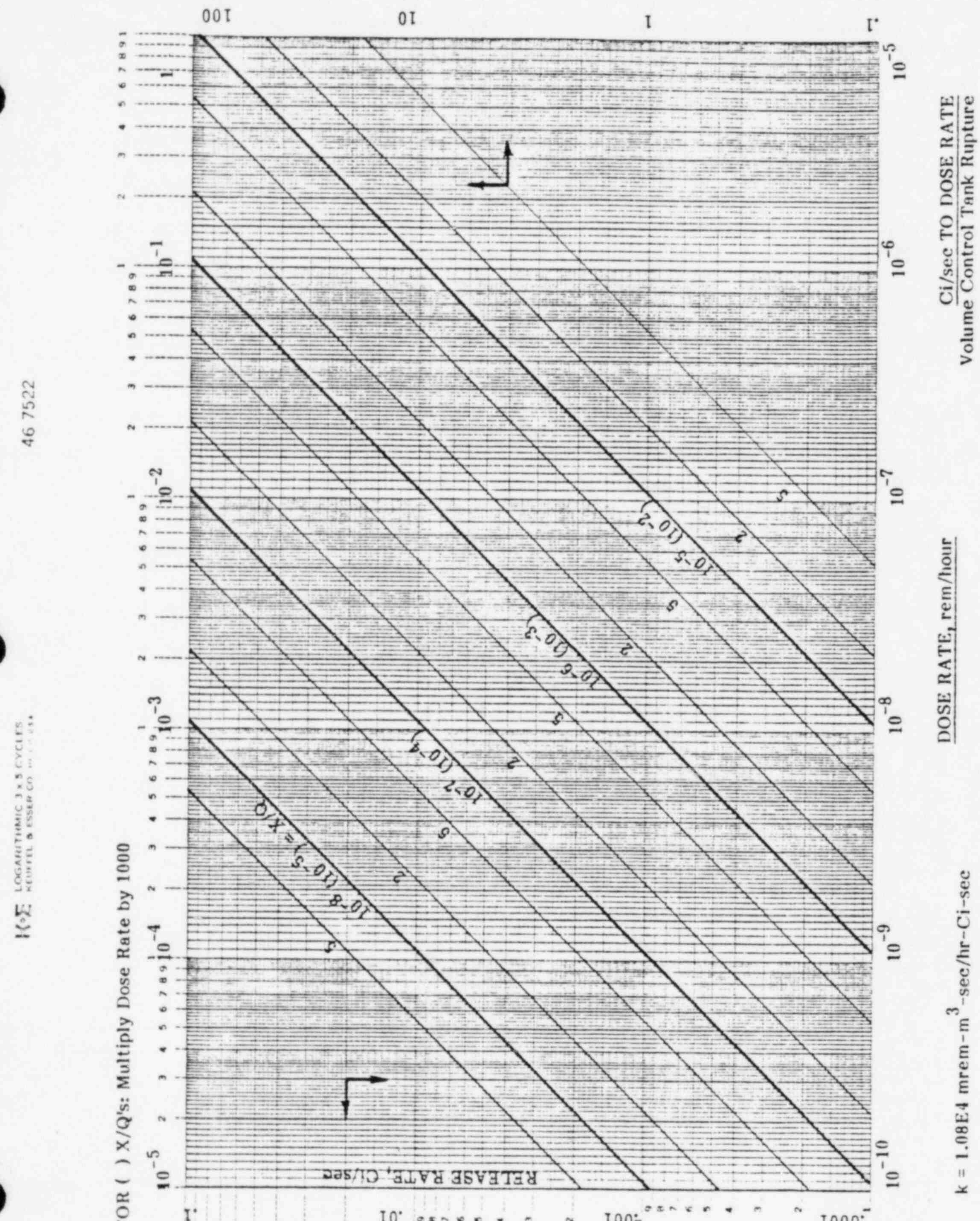
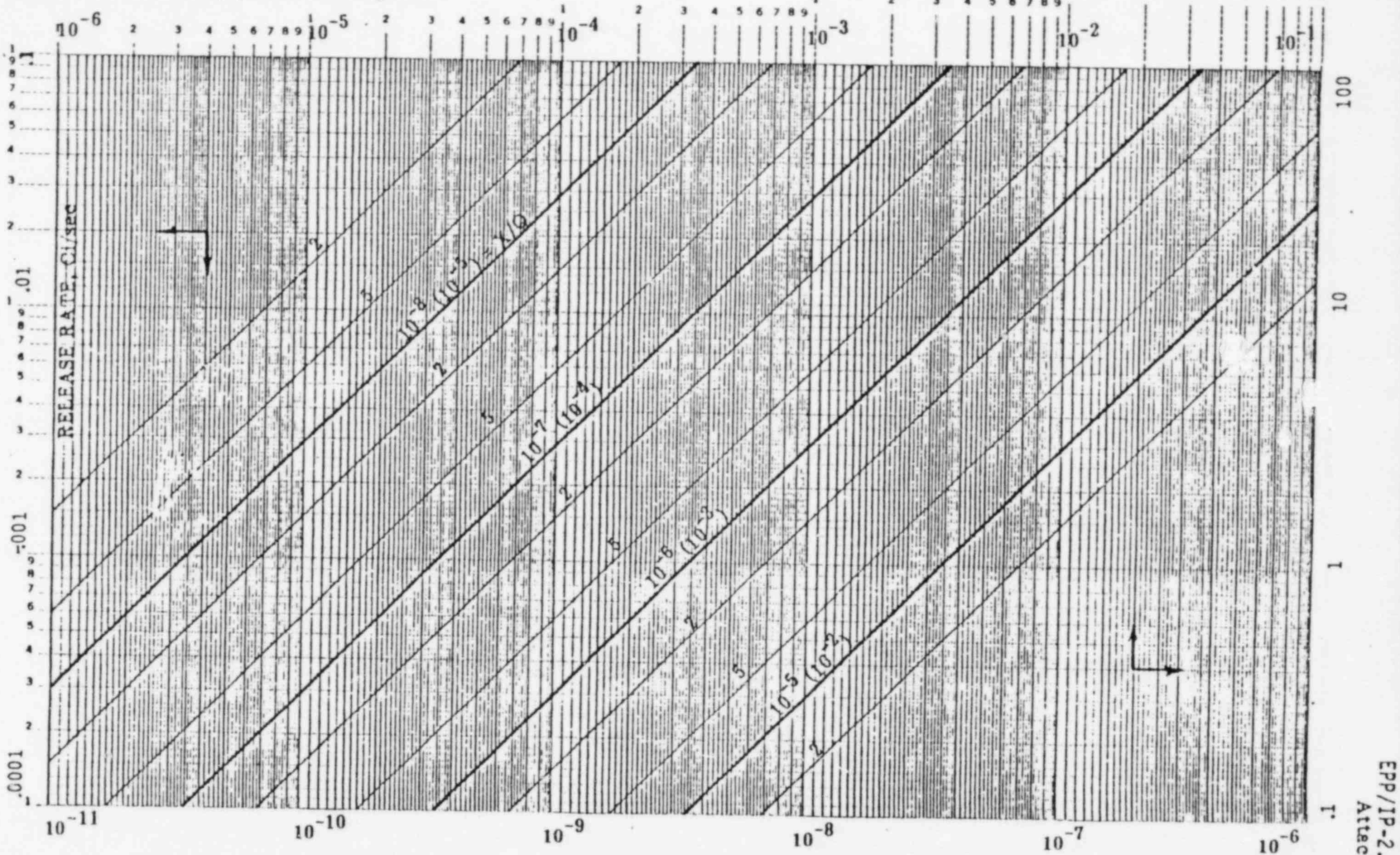

Ci/sec TO DOSE RATE
Volume Control Tank Rupture
DOSE RATE, rem/hour
k = 1.08E4 mrem-m^3-sec/hr-Ci-sec
FOR ( ) X/Q's: Multiply Dose Rate by 1000
RELEASE RATE, Ci/sec
X/Q = 10-8 (10-5)
10-7 (10-4)
10-6 (10-3)
10-5 (10-2)
46 7522
LOGARITHMIC 3 x 5 CYCLES
KEUFFEL & ESSER CO.

K•E LOGARITHMIC 3 x 5 CYCLES KEUFFEL & ESSER CO. MADE IN U.S.A.

46 7522

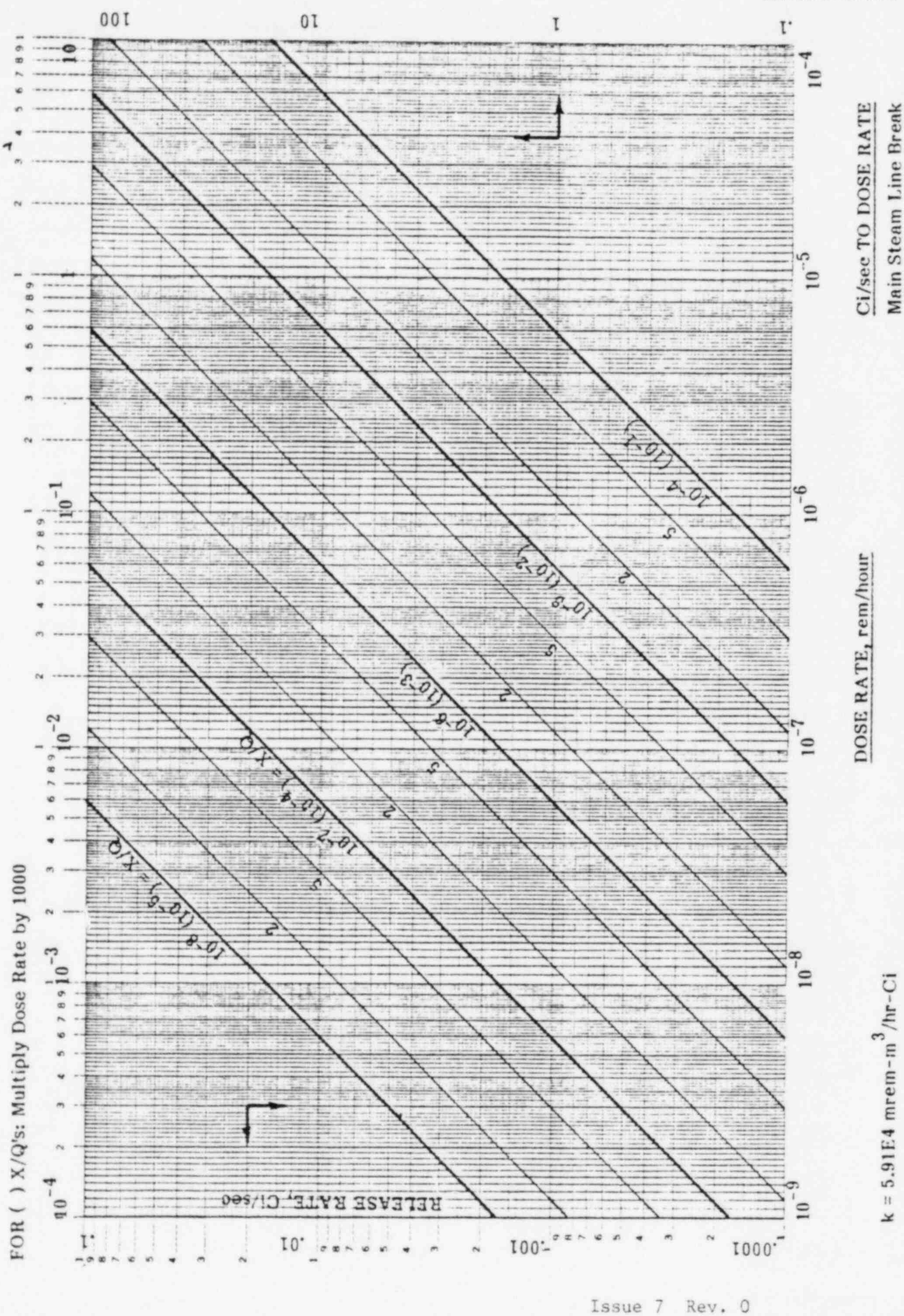
FOR ( ) X/Q's: Multiply Dose Rate by 1000

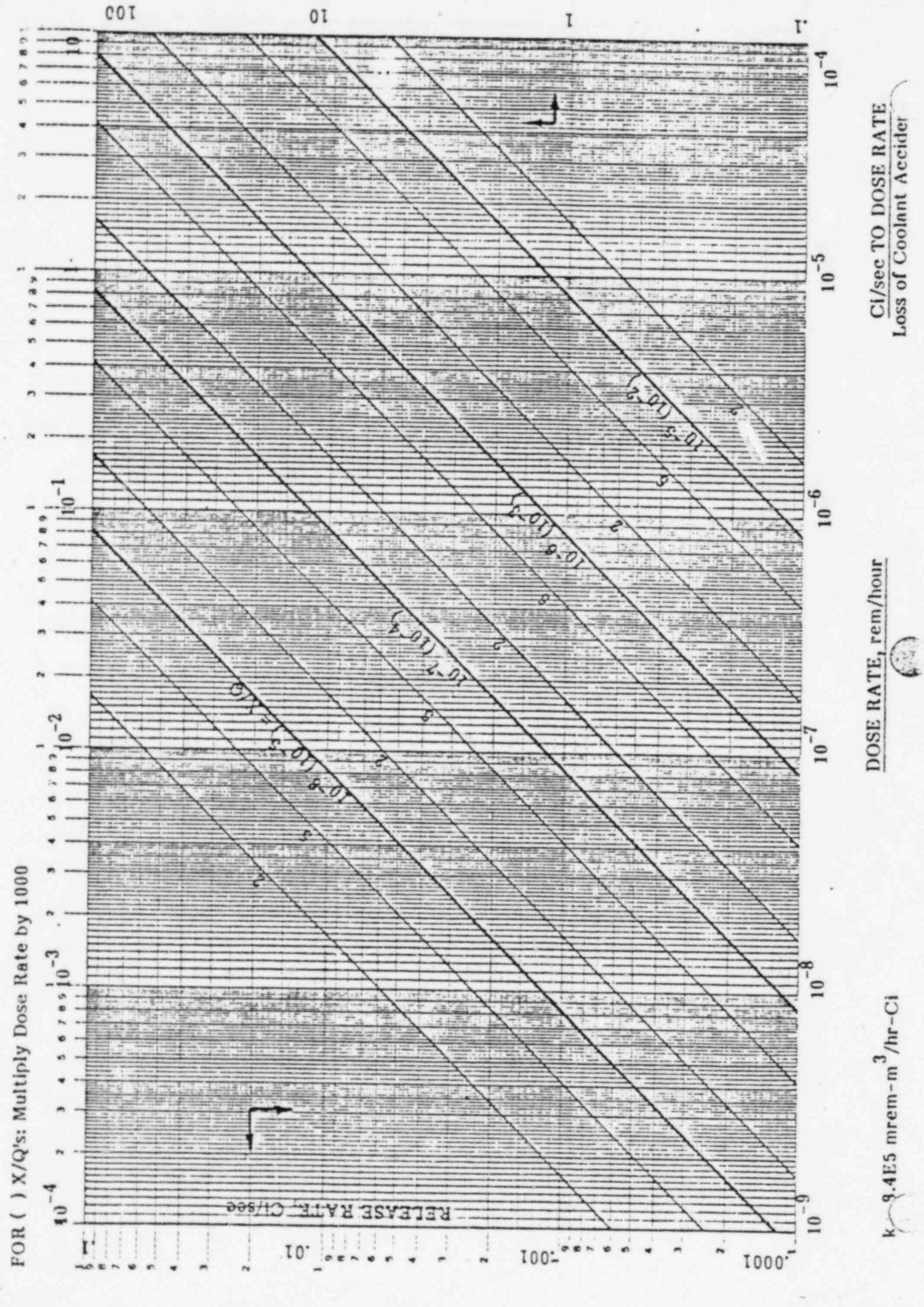


k = 3.39E3 mrem-m^3/hr-Ci

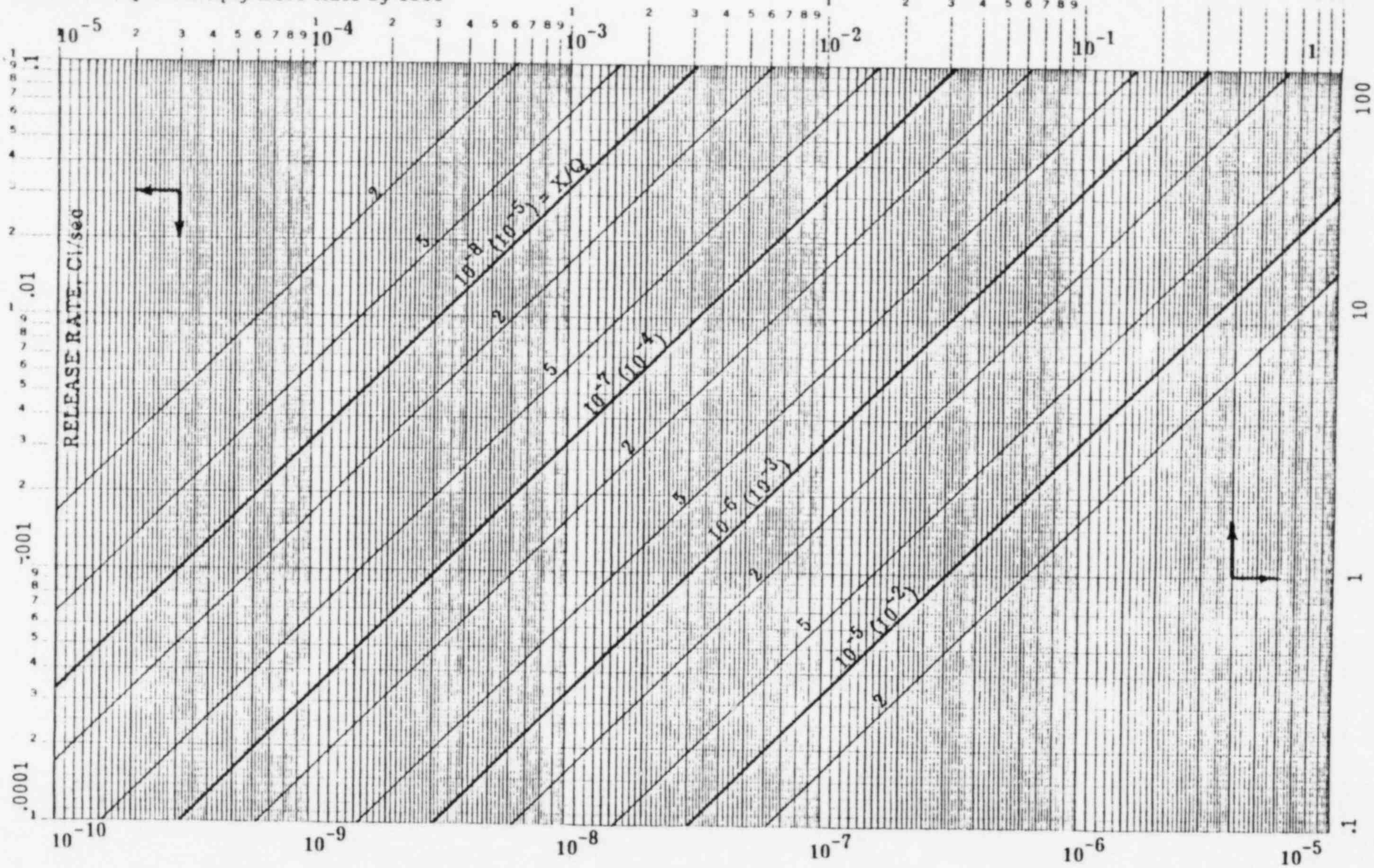
DOSE RATE, rem/hour

Ci/sec TO DOSE RATE
Gas Surge/Waste Gas Decay Tank Ruptu


Ci/sec TO DOSE RATE
Main Steam Line Break
DOSE RATE, rem/hour
RELEASE RATE, Ci/sec
FOR ( ) X/Q's: Multiply Dose Rate by 1000
k = 5.91E4 mrem-m³/hr-Ci
X/Q = 10⁻⁸ (10⁻⁵)
10⁻⁷ (10⁻⁴) = X/Q
10⁻⁶ (10⁻³)
10⁻⁵ (10⁻²)
10⁻⁴ (10⁻¹)
46 7522
K+E LOGARITHMIC 3 x 5 CYCLES


Ci/sec TO DOSE RATE
Loss of Coolant Accident
DOSE RATE, rem/hour
k = 8.4E5 mrem-m^3/hr-Ci
FOR ( ) X/Q's: Multiply Dose Rate by 1000
RELEASE RATE, Ci/sec
K·E LOGARITHMIC 3 x 5 CYCLES KEUFFEL & ESSER CO.
46 7522

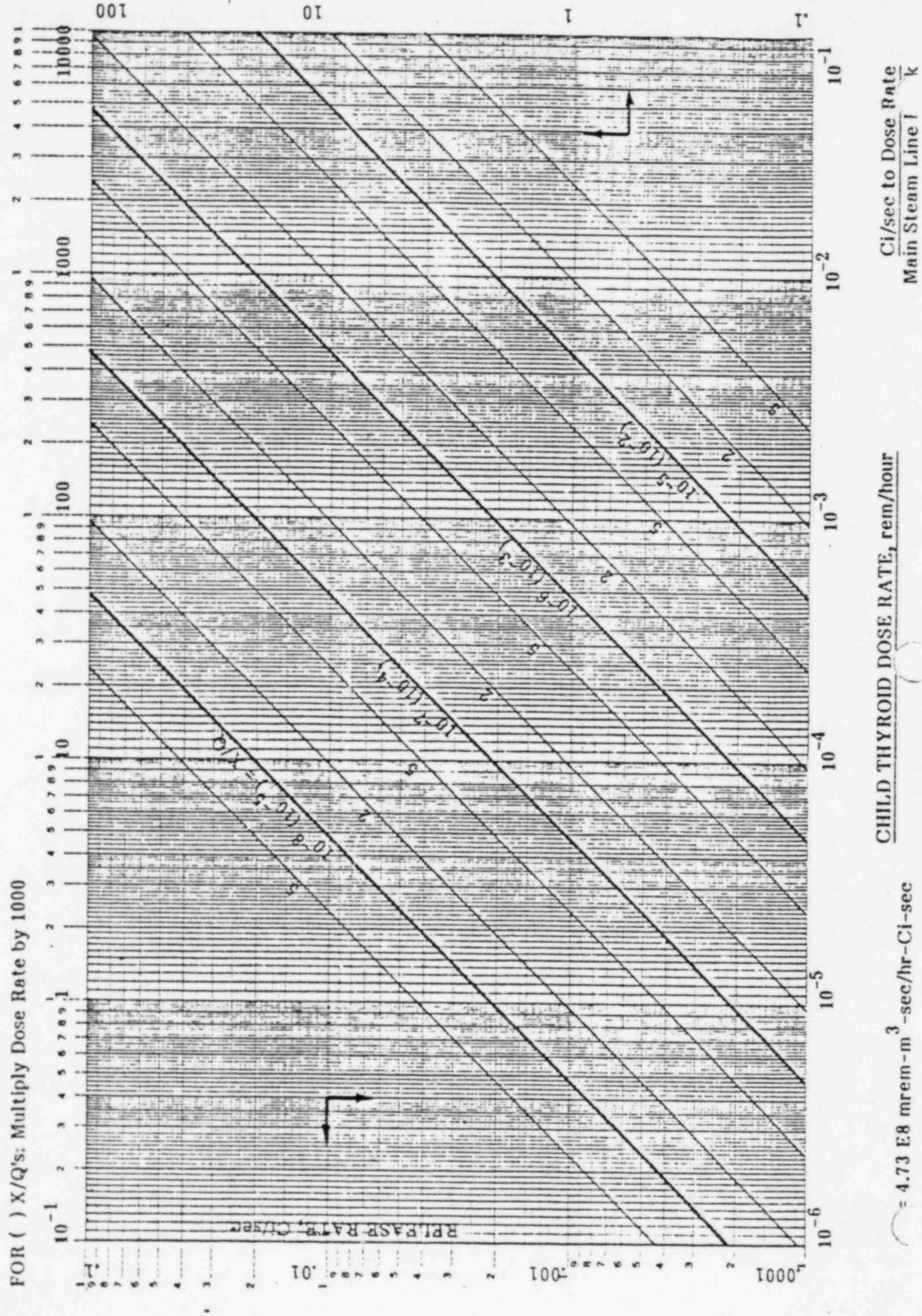
FOR ( ) X/Q's: Multiply Dose Rate by 1000



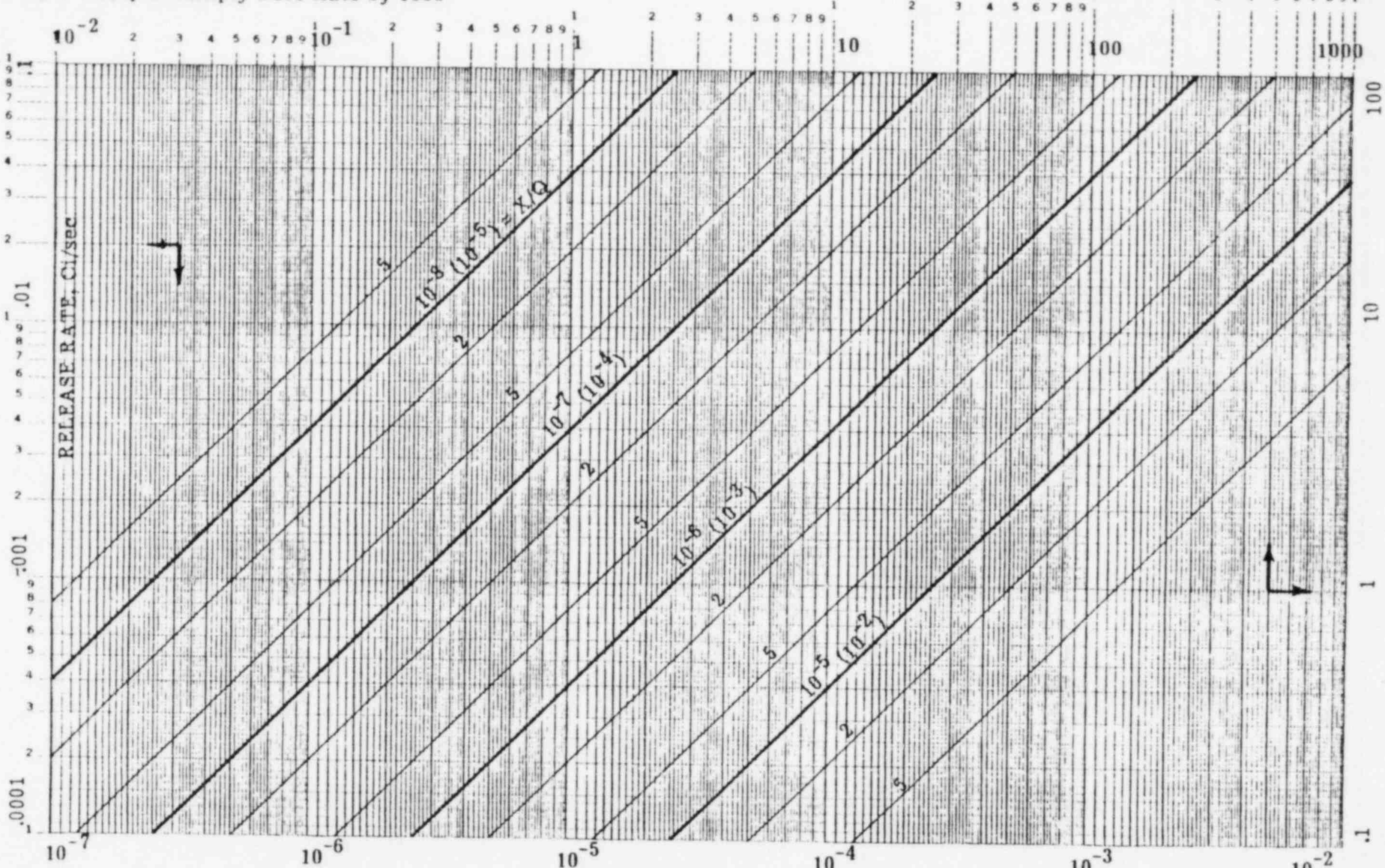
DOSE RATE, rem/hour

k = 3.12E4 mrem-m^3-sec/hr-Ci-sec

Ci/sec TO DOSE RATE
Fuel Handling Accident


CHILD THYROID DOSE RATE, rem/hour
Ci/sec to Dose Rate / Main Steam Line I_k
= 4.73 E8 mrem-m^3-sec/hr-Ci-sec
FOR ( ) X/Q's: Multiply Dose Rate by 1000
RELEASE RATE, Ci/sec
X/Q = 10^-8 (10^-5)
10^-7 (10^-4)
10^-6 (10^-3)
10^-5 (10^-2)
46 7522
K+E LOGARITHMIC 3 x 5 CYCLES KEUFFEL & ESSER CO.

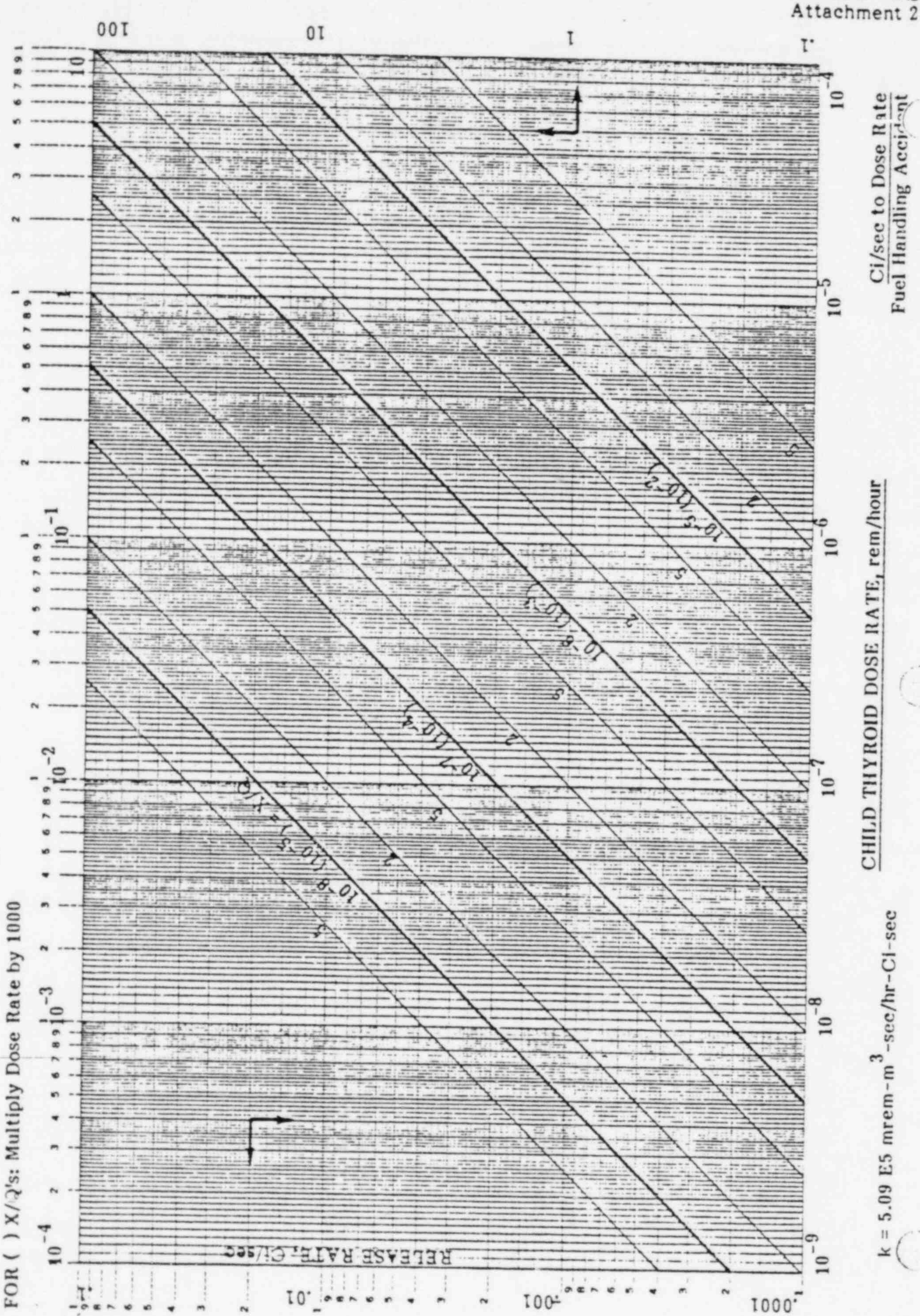
FOR ( ) X/Q's: Multiply Dose Rate by 1000



CHILD THYROID DOSE RATE, rem/hour

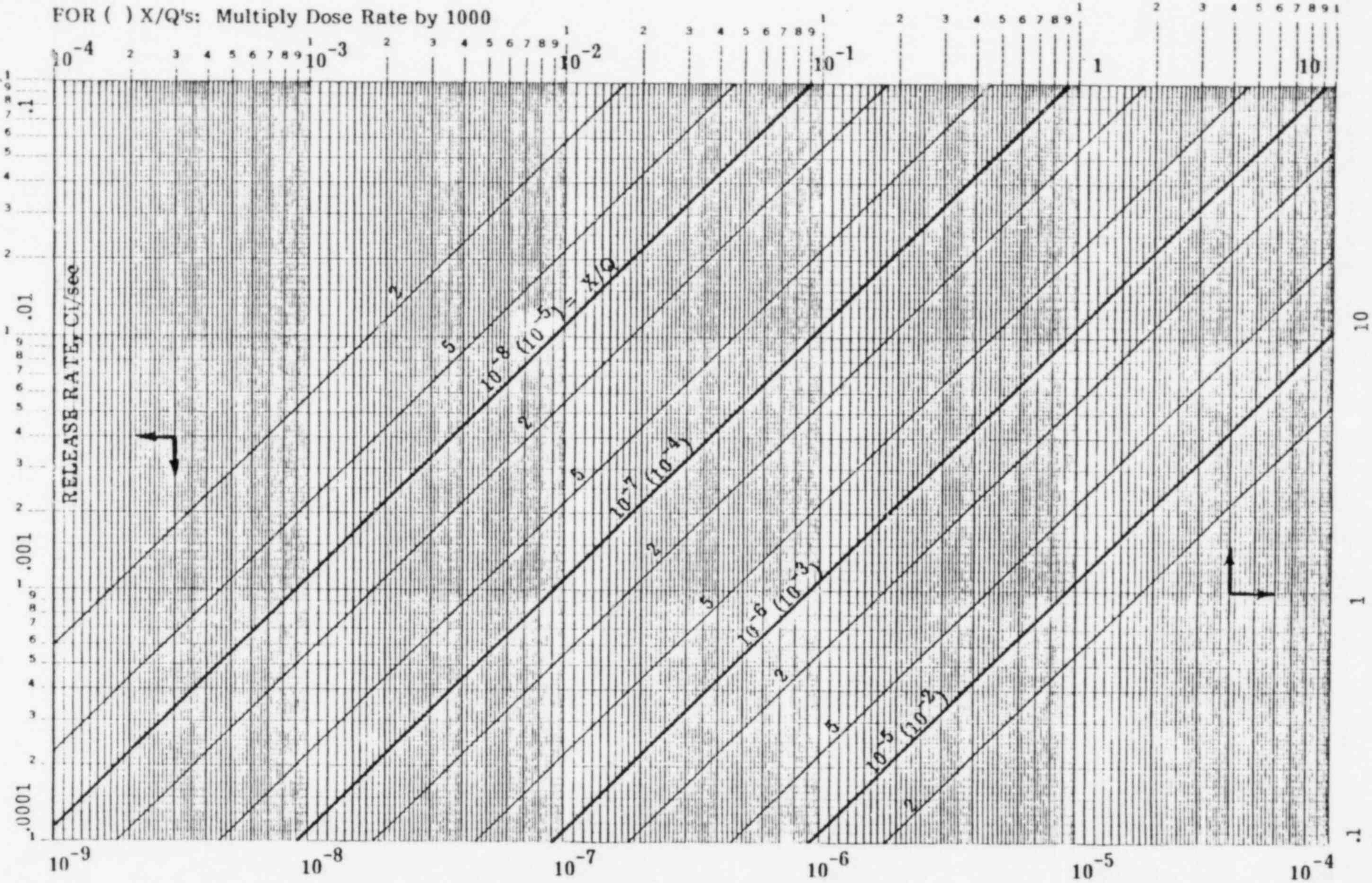
k = 2.52 E7 mrem-m^3-sec/hr-Ci-sec

Ci/sec to Dose Rate
Loss of Coolant Accident


Ci/sec to Dose Rate
Fuel Handling Accident
CHILD THYROID DOSE RATE, rem/hour
k = 5.09 E5 mrem-m^3-sec/hr-Ci-sec
FOR ( ) X/Q's: Multiply Dose Rate by 1000
RELEASE RATE, Ci/sec
K+E LOGARITHMIC 3 x 5 CYCLES
KEUFFEL & ESSER CO.
46 7522
10^-8 (10^-5) = X/Q
10^-7 (10^-4)
10^-6 (10^-3)
10^-5 (10^-2)

K+E LOGARITHMIC 3 x 5 CYCLES KEUFFEL & ESSER CO. MADE IN U.S.A. 46 7522

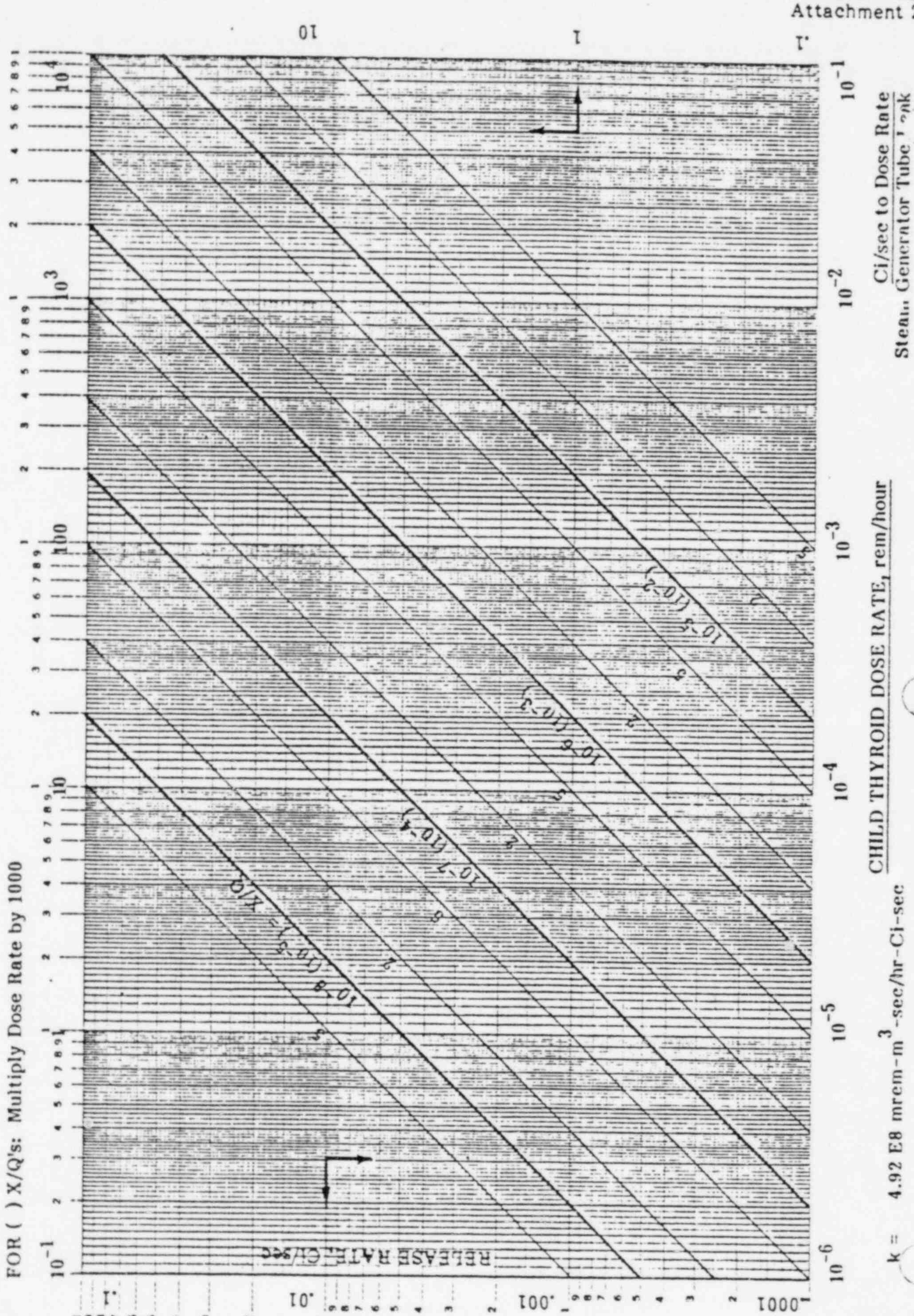
FOR ( ) X/Q's: Multiply Dose Rate by 1000



DOSE RATE, rem/hour

k = 9.08 E5 mrem-m^3-sec/hr-Ci-sec

Ci/sec to Dose Rate
Steam Generator Tube Leak


Ci/sec to Dose Rate
Steam Generator Tube Leak
CHILD THYROID DOSE RATE, rem/hour
k = 4.92 E8 mrem-m^3-sec/hr-Ci-sec
FOR ( ) X/Q's: Multiply Dose Rate by 1000
RELEASE RATE, Ci/sec
X/Q = 10^{-8} (10^{-5})
10^{-7} (10^{-4})
10^{-6} (10^{-3})
10^{-5} (10^{-2})
K·E LOGARITHMIC 3 x 5 CYCLES
46 7522

FOR MONITORS RM-VS-107B ◯ RM-GW-108B ◯

RELEASE RATE

a		b		c		d	
	X		X		=		Release Rate Ci/sec
Monitor CPM		Flow rate, CFM					

Conversion Factors

VCT Rupture	6.19 E-12
GST Rupture	6.13 E-12
MSL Break	1.24 E-11
FH Accident	1.47 E-11
WGDT Release	3.05 E-10
LOCA	4.50 E-12

DOSE CALCULATION

Distance (miles)	d Release Rate (Ci/sec)		e X/Q** (sec/m³)		f Dose Factor Whole Body Child Thyr.		g Dose Rate (R/hr)		h Proj. Time (hrs)		i Dose (rem)
Site Boundary EAB		X		X		=		X		=	
				X		=		X		=	
2.0		X		X		=		X		=	
				X		=		X		=	
5.0		X		X		=		X		=	
				X		=		X		=	
10.0		X		X		=		X		=	
				X		=		X		=	
Other ____		X		X		=		X		=	
				X		=		X		=	

Dose Factors

VCT Rupture	1.08 E1 Negl.	GST/WGDT Rupt.	3.39 Negl.
		MSL Break	5.91 E1 4.78 E5
Fuel Handling	3.12 E1 5.09 E2	Loss of Coolant	8.4 E2 2.52 E4

**From TAB 2

Date: ______________ Time: ______________ am/pm Name: ______________

FOR MONITORS RM-VS-112 (LR)
RM-GW-110 (LR)
(SA-10)

RELEASE RATE

a		b		c		d
	X		X		=	
Monitor CPM		Flow rate, CFM				Release Rate Ci/sec

Conversion Factors

VCT Rupture	2.12 E-8
GST Rupture	5.71 E-8
MSL Break	3.17 E-9
FH Accident	4.77 E-9
WGDT Release	5.71 E-6
LOCA	3.32 E-10

DOSE CALCULATION

Distance (miles)	d Release Rate (Ci/sec)		e X/Q** (sec/m³)		f Dose Factor: Whole Body / Child Thyr.		g Dose Rate (R/hr)		h Proj. Time (hrs)		i Dose (rem)
Site Boundary EAB		X		X		=		X		=	
				X		=		X		=	
2.0		X		X		=		X		=	
				X		=		X		=	
5.0		X		X		=		X		=	
				X		=		X		=	
10.0		X		X		=		X		=	
				X		=		X		=	
Other ______		X		X		=		X		=	
				X		=		X		=	

Dose Factors

VCT Rupture	1.08 E1 Negl.	GST/WGDT Rupt.	3.39 Negl.
		MSL Break	5.31 E1 4.78 E3
Fuel Handling	3.12 E1 5.09 E2	Loss of Coolant	8.4 E2 2.52 E4

**From TAB 2

Date: ____________ Time: ____________ am/pm Name: ____________

FOR MONITORS RM-VS-112 (HR) ○ RM-GW-110 (HR) ○ (SA-9) ○

RELEASE RATE

a		b		c		d	
	X		X		=		Release Rate Ci/sec
Monitor CPM		Flow rate, CFM					

Conversion Factors

VCT Rupture	7.71 E-5
GST Rupture	2.08 E-4
MSL Break	1.15 E-5
FH Accident	1.73 E-5
WGDT Release	2.08 E-4
LOCA	1.21 E-6

DOSE CALCULATION

Distance (miles)	d Release Rate (Ci/sec)		e X/Q** (sec/m³)		f Dose Factor: Whole Body / Child Thyr.		g Dose Rate (R/hr)		h Proj. Time (hrs)		i Dose (rem)
Site Boundary EAB		X		X		=		X		=	
				X		=		X		=	
2.0		X		X		=		X		=	
				X		=		X		=	
5.0		X		X		=		X		=	
				X		=		X		=	
10.0		X		X		=		X		=	
				X		=		X		=	
Other ____		X		X		=		X		=	
				X		=		X		=	

Dose Factors

VCT Rupture	1.08 E1 Negl.	GST/WGDT Rupt.	3.39 Negl.
		MSL Break	5.91 E1 4.78 E5
Fuel Handling	3.12 E1 5.09 E2	Loss of Coolant	8.4 E2 2.52 E4

**From TAB 2

Date: ______________ Time: ______________ am/pm Name: ______________

MONITOR: ____________

RELEASE RATE

a		b		c		d	
	X		X		=		Release Rate Ci/sec
Monitor CPM		Flow rate, CFM					

DOSE CALCULATION

Distance (miles)	d Release Rate (Ci/sec)		e X/Q** (sec/m³)		f Dose Factor Whole Body Child Thyr.		g Dose Rate (R/hr)		h Proj. Time (hrs)		i Dose (rem)
		X		X		=		X		=	
				X		=		X		=	
		X		X		=		X		=	
				X		=		X		=	
		X		X		=		X		=	
				X		=		X		=	
		X		X		=		X		=	
				X		=		X		=	
		X		X		=		X		=	
				X		=		X		=	

Dose Factors

VCT Rupture	1.08 E1 Negl.	GST/WGDT Rupt.	1.39 Negl.
		MSL Break	5.91 E1 4.78 E5
Fuel Handling	1.12 E1 5.09 E2	Loss of Coolant	8.4 E2 2.52 E4

**From Attachment 1

Date: ____________ Time: ____________ am/pm Name: ____________

Duquesne Light

EPP/IP-2.6
TAB 7.
ATTACHMENT 28
FOR RM-MS-100 A, B, C
RM-MS-101
RASMOS

RELEASE RATE

a		b		c		d
	−	15	X		=	
Monitor CPM		Background, CPM				Release* Rate Ci/sec

Conversion Factors

SGADV ONLY = 8.13 E-2
MSSV ONLY = 2.84
SGADV + MSSV = 1.97
SGADV + 2 MSSV = 3.91
2 MSSV = 5.68
AFTEX = 3.94E-1

DOSE CALCULATION

Distance (miles)	d Release Rate (Ci/sec)		e X/Q** (sec/m³)		f Dose Factor: Whole Body / Child Thyr.		g Dose Rate (R/hr)		h Proj. Time (hrs)		i Dose (rem)
Site Boundary EAB		X		X	.262	=		X		=	
				X	694	=		X		=	
2.0		X		X	262	=		X		=	
				X	694	=		X		=	
5.0		X		X	262	=		X		=	
				X	694	=		X		=	
10.0		X		X	262	=		X		=	
				X	694	=		X		=	
Other ____		X		X	262	=		X		=	
				X	694	=		X		=	

* FROM RASMOS IF AVAILABLE AND IF MS-100A, B, C AND MS-101 ARE READING IN EXCESS OF 15 CPM AND IF THERE IS OTHER INDICATION OF A SIGNIFICANT PRIMARY-SECONDARY LEAK.

NOTE: DO NOT USE THIS METHOD IF THE RELIEF VALVE IS VENTING BOTH STEAM AND WATER.

**From TAB 2

Date: ____________ Time: ____________ am/pm Name: ____________

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DOSE PROJECTION BY HAND CALCULATION-KNOWN ISOTOPIC RELEASE RATE

A. PREREQUISITES

The following data must be available for this method:

1. Release Rate, in CFM or cc/minute.
2. Concentration of nobles gases and radioiodines, in Ci/cc
3. Release Period, in hours
4. Iodine filter efficiency

B. PROCEDURE

1. Enter the wind direction and distance at which the whole body and thyroid doses are to be calculated in the spaces provided on the worksheet.
2. Determine the release rate, using the applicable formula:

   2.1 Release Rate = ___________cfm x 1.7 E6 = ________cc/hr

   2.2 Release Rate = ___________cc/min x 60 = __________cc/hr

3. Enter the release rate on the calculation worksheet in blocks 15e & 21e.
4. Enter the individual radionuclide concentrations in the appropriate blocks in column b.
5. Multiply each release concentration by the factors in column c. Enter the result in column d.
6. Sum blocks 1d through 14d and enter the result in block 15d. Sum blocks 16d through 20d and enter the result in block 21d.
7. Enter the release period in blocks 15f and 21 f. If the length of release is unknown use 1 hour.
8. Determine the filter efficiency (0/0) (ie: main filter banks) for collection through which the radioiodines are released. Determine the release fraction using the formula below and enter the result in block 21g. If the filter efficiency is unknown, assume 90%.

   $$\text{Release Fraction} = 1 - \frac{\text{filter efficiency}}{100} = \_\_\_\_\_\_\_\_\_\_$$

9. Enter the X/Q value for the chosen distance and direction in blocks 15h and 21h.
10. Determine the whole body dose (rem) by multiplying the values entered in blocks 15d through 15h (less 15g), and enter the result in block 15i.

11. Determine the child thyroid dose (rem) by multiplying the values entered in blocks 21d through 21h, and enter the result in block 21i.

12. Protective actions are based on the child thyroid dose and the whole body dose. If the thyroid dose to an adult, teenager, or infant is desired, determine the doses using Attachment 2. The calculation on this worksheet determines the ratio between the child and the adult/teenager/infant thryoid doses. This ratio, once determined, is suitable for subsequent calculations as long as the radioiodine composition of the release has not changed.

13. Enter the date, time, and initials of the person who performed the calculation in the spaces provided. Retain this form for subsequent review and evaluation.

14. If the doses at different distances/directions are required, repeat steps 9 through 13, using the reverse side of the worksheet. Carry over values in blocks 15d, e, and f; and 21d, e, f, and g, from the front side if the data have remained the same. Otherwise, use a new worksheet.

C ATTACHMENTS

1. Calculation Worksheet

2. Thyroid Ratio Worksheet.

WIND DIRECTION: ______________ DATE: ______________ TIME: ______________

DISTANCE: ______________ INITIAL: ______________

COMMENT: ______________

	a	b	c	d	e	f	g	h	i
	nuclide	Release Conc. µCi/cc	Dose Factor	block b x block c	Release Rate cc/hr	Release Period hr	Release Fraction	X/Q	DOSE rem (d x e x f)
1	Kr-83m		2.4 E-12						
	Kr-85m		3.71 E-8						
	Kr-85		5.1 E-10						
	Kr-87		1.88 E-7						
	Kr-88		4.66 E-7						
	Kr-89		5.26 E-7						
	Kr-90		4.95 E-7						
	Xe-131m		2.9 E-9						
	Xe-133m		7.96 E-9						
	Xe-133		9.32 E-9						
	Xe-135m		9.9 E-8						
	Xe 135		5.74 E-8						
	Xe-137		4.5 E-8						
	Xe-137		2.8 E-7						Whole Body
15		SUM block d's							
	I-131		7.73 E-4						
	I-132		9.2 E-6						
	I-133		1.83 E-4						
	I-134		2.41 E-6						
	I-135		3.77 E-5						Child Thyroid
21		SUM block d's							

a	b	c	d	e	f	g	h	i
Distance	Direction	Whole body/ Thyroid	from block 15d & 21d	Release Rate cc/hr	Release Period hr	Release Fraction	X/Q	DOSE rem (defgh)

a,b Enter chosen distance/direction

c Indicate which

d Carry over from front of form

e,f,g Carry over from front

h Enter X/Q corresponding to chosen direction/distance.

i Dose = blocks d x e x f x g x h

a	b	c	d
	Release Conc. µCi/cc	Dose Factor	Block b x block c
I-131		7.73E-4	
I-132		9.2 E-6	
I-133		1.83 E-4	
I-134		2.41 E-6	
I-135		3.77 E-5	
		CHILD sum	1)
I-131		5.68 E-4	
I-132		5.45 E-6	
I-133		1.02 E-4	
I-134		1.42 E-6	
I-135		2.13 E-5	
		ADULT sum	2)
I-131		6.97 E-4	
I-132		7.2 E-6	
I-133		1.39 E-4	
I-134		1.88 E-6	
I-135		2.96 E-5	
		TEEN sum	3)
I-131		7.06 E-4	
I-132		8.06 E-6	
I-133		1.69 E-4	
I-134		2.12 E-6	
I-135		3.31 E-5	
		INFANT sum	4)

NOTE
Complete this form only if adult, infant, or teen thyroid doses are to calculated.

ADULT

$\dfrac{\boxed{2}}{\boxed{1}} = \boxed{}$

TEEN

$\dfrac{\boxed{3}}{\boxed{}} = \boxed{}$

INFANT

$\dfrac{\boxed{4}}{\boxed{1}} = \boxed{}$

1. Enter the release concentrations in Column b in the sections to be calculated.
2. Multiply the value in each block by the associated factor in Column c. Enter the result in Column d.
3. Sum each of the five blocks in Column d and enter the result in block 1,2,3, or 4, as applicable.
4. Enter the values in blocks d.1, 2, 3, and/or 4, in the similarly numbered blocks directly above.
5. Divide the child thyroid factor (block 1) into the applicable adult, teen, or infant factor (blocks 2, 3,4). Enter the ratio in the block provided.
6. Multiply this ratio by the CHILD thyroid dose calculated elsewhere, to obtain the other desired thyroid doses.
7. These ratios, once calculated, can be used as long as the radioiodine composition in the release remains the same.

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DOSE PROJECTION BY HAND CALCULATION-KNOWN ISOTOPIC INVENTORY

A. PREREQUISITES

The following data must be available for this method:

1. Total concentrations of nobles gases and radioiodines released, in Ci.

B. PROCEDURE

1. Enter the wind direction and distance at which the whole body and thyroid doses are to be calculated in the spaces provided on the worksheet.

2. Enter the individual radionuclide concentrations (Ci) in the appropriate blocks in column b.

3. Multiply each release concentration by the factors in column c. Enter the result in column d.

4. Sum blocks 1d through 14d and enter the result in block 15d. Sum blocks 16d through 20d and enter the result in block 21d.

5. Enter the X/Q value for the chosen distence and in blocks 15e and 21e.

6. Determine the whole body dose (rem) by multiplying the values entered in blocks 15d and 15e, and enter the result in block 15f.

7. Determine the child thyroid dose (rem) by multiplying the values entered in blocks 21d and 21e, and enter the result in block 21f.

8. Protective actions are based on the child thryoid dose and the whole body dose. If the thyroid dose to an adult, teenager, or infant is desired, determine the doses using Attachment 2. The calculation on this worksheet determines the ratio between the child and the adult/teenager/infant thryroid doses. This ratio, once determined, is suitable for subsequent calculations as long as the radioiodine composition of the release has not changed.

9. Enter the date, time, and initials of the person who performed the calculation in the spaces provided. Retain this form for subsequent review and evaluation.

10. If the doses at different distances/directions are required, repeat steps 5 through 9, using the reverse side of the worksheet. Carry over values in blocks 15d and 21d from the front side if the data have remained the same. Otherwise, use a new worksheet.

C. ATTACHMENTS

1. Calculation Worksheet

2. Thyroid Ratio Worksheet.

WIND DIRECTION: ____________ DATE: ____________ TIME: ______________

DISTANCE: __________________ INITIAL: ______________________________

COMMENT: ____

	a	b	c	d	e	f
	nuclide	Release Conc. Ci	Dose Factor	block b x block c	X/Q	DOSE rem (d x c)
1	Kr-83m		2.4 E-6			
	Kr-85m		3.71 E-2			
	Kr-85		5.1 E-4			
	Kr-87		1.88 E-1			
	Kr-88		4.66 E-1			
	Kr-89		5.26 E-1			
	Kr-90		4.95 E-1			
	Xe-131m		2.9 E-3			
	Xe-133m		7.96 E-3			
	Xe-133		9.32 E-3			
	Xe-135m		9.9 E-2			
	Xe 135		5.74 E-2			
	Xe-137		4.5 E-2			
	Xe-137		2.8 E-1			Whole Body
15			SUM block d's			
	I-131		7.73 E+2			
	I-132		9.2 E0			
	I-133		1.83 E+2			
	I-134		2.41 E0			Child
	I-135		3.77 E+1			Thyroid
21			SUM block d's			

a	b	c	d	e	f
Distance	Direction	Whole body/ Thyroid	from block 15d & 21d	X/Q	DOSE rem

a,b Enter chosen distance/direction

c Indicate which

d Carry over from front of form

e Enter X/Q corresponding to chosen distance/direction

f Dose = blocks d x e

a	b	c	d
	Release Conc. Ci	Dose Factor	Block b x block c
I-131		7.73E+2	
I-132		9.2 E0	
I-133		1.83 E+2	
I-134		2.41 E0	
I-135		3.77 E+1	
		CHILD sum	1)
I-131		5.68 E+2	
I-132		5.45 E0	
I-133		1.02 E+2	
I-134		1.42 E0	
I-135		2.13 E+1	
		ADULT sum	2)
I-131		6.97 E+2	
I-132		7.2 E0	
I-133		1.39 E+2	
I-134		1.88 E0	
I-135		2.96 E+1	
		TEEN sum	3)
I-131		7.06 E+2	
I-132		8.06 E0	
I-133		1.69 E+2	
I-134		2.12 E0	
I-135		3.31 E+1	
		INFANT sum	4)

NOTE
Complete this form only if adult, infant, or teen thyroid doses are to calculated.

$$\frac{\boxed{2}}{\boxed{1}} = \boxed{}$$ ADULT

$$\frac{\boxed{3}}{\boxed{1}} = \boxed{}$$ TEEN

$$\frac{\boxed{4}}{\boxed{1}} = \boxed{}$$ INFANT

1. Enter the release concentrations in Column b in the sections to be calculated.
2. Multiply the value in each block by the associated factor in Column c. Enter the result in Column d.
3. Sum each of the five blocks in Column d and enter the result in block 1,2,3, or 4, as applicable.
4. Enter the values in blocks d.1, 2, 3, and/or 4, in the similarly numbered blocks directly above.
5. Divide the child thyroid factor (block 1) into the applicable adult, teen, or infant factor (blocks 2, 3,4). Enter the ratio in the block provided.
6. Multiply this ratio by the CHILD thyroid dose calculated elsewhere, to obtain the other desired thyroid doses.
7. These ratios, once calculated, can be used as long as the radioiodine composition in the release remains the same.

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DOSE PROJECTIONS BASED ON FIELD MEASUREMETNS

A. PURPOSE

This procedure provides a method for determining the magnitude of an unmonitored airborne release. This source term, once determined, can be used to project doses at other locations.

B. PROCEDURE

1. Based on Whole Body Dose Rate

1.1 If the source of the release is known, select an appropriate $\overline{E}_\gamma$ from the table below. If the source is unknown, use the most restrictive accident (low $\overline{E}_\gamma$) which can not be reasonably excluded. Record this $\overline{E}_\gamma$ in column e of part I of the calculation worksheet (Attachment 1).

Source	$\overline{E}_\gamma$ MeV/dis
Volume Control Tank Rupture	0.01
Gas Surge Tank Rupture	0.002
Main Steam Line Break	0.28
Waste Gas Decay Tank Release	0.002
Fuel Handling Accident	0.002
Loss of Coolant Accident	1.02

1.2 Direct the offsite monitoring team to take readings at a convenient point(s) identifiable on the TSC/EOF emergency planning zone map. The point(s) should be under the plume centerline. (If readings have already been obtained, select one of the readings at a location where X/Q can be determined). All measurements should be made with an energy compensated GM instrument (or equivalent) having a reasonable response at 50 KeV. Note the chosen location in column a of the calculation worksheet.

1.3 Determine the X/Q values associated with the survey location(s). Record this value in column f. (It may be appropriate to use Tab 3, in which case, use the X/Q value on the overlay line that is closest to the survey location for the prevailing meteorological conditions.)

1.4 Record the survey point location (col. a) and measured dose rate (col. b) on the calculation worksheet.

1.5 Multiply the measured dose rate (col. b) by the conversion factor in column c. Record the result in column d.

1.6 Divide the value on column d by the E (col. e) and by the X/Q (col. F). The result is the approximate source term in Ci/sec. Record this value in column g.

1.7 For a more representative source term, repeat steps 1.1 through 1.6 for other locations, and average the individual results recorded in column g.

2. Based on Radioiodine Field Samples

This method can be used if samples have been taken using charcoal or silver zeolite cartridges, and when these samples have been analyzed and concetrations of the various radioiodines (in μCi/cc), or the gross radioiodine concentration (μCi/cc), are known. Proceed as follows:

2.1 From the samples available, select a sample which was obtained at an off-site location which is identifiable on the TSC/EOF emergency planning zone map and as near as possible to the plume centerline.

2.2 Have the sample analyzed on a multichannel analyzer, or if gross activity is to be used, on a suitable laboratory counter. If the filter cartridge is not silver zeolite, appropriate sample preparation techniques to lessen the interference of sample xenon activity should be performed.

2.3 On part II of the worksheet (Attachment 1), enter the activity (μCi/cc) or the iodine radionuclides in the appropriate blanks in column b.

2.4 Determine the X/Q values associated with the sample location. Record this value on column c.

2.5 Divide the activity for each radioiodine (col. b) by the X/Q (col. c) the result is the release rate in Ci/sec. Record this value in column d.

3. The source terms, once determined, can be used with the dose conversion graphs in Tab 7 to project the off-site down-wind dose at

other locations. If the iodine isotopic source term has been determined (step 2), Tab 8 may be used to project down-wind thyroid doses.

C. ATTACHMENT

1. Calculation Worksheet.

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CALCULATION WORKSHEET

PART I Based on External Dose Rate

a	b	c	d	e	f	g
Location	Dose Rate (mrem/hr)	Conv Factor	(b x c) $\frac{\text{Mev-Ci}}{\text{dis-m}^3}$	E (MeV/d)	X/Q (sec/m³)	Q (d ÷ e ÷ f) (Ci/sec)
		1.11 E-7				
		1.11 E-7				
		1.11 E-7				
		1.11 E-7				
		1.11 E-7				
		1.11 E-7				
		1.11 E-7				

PART II Based on Radioiodine Sample

a	b	c	d
Nuclide	Sample Conc. (μCi/cc*)	X/Q (sec/m³)	Release Rate (Ci/sec)
Gross			
I-131			
I-132			
I-133			
I-134			
I-135			
		Total	

*mathematically equivalent to Ci/m³

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DOSE ASSESSMENT BASED ON ENVIRONMENTAL MEASURMENTS AND SAMPLES

A. PREREQUISITES

1. Field monitoring and sampling results.

B. DISCUSSION

This attachment provides methodology for converting activity observed in various sample media into whole body or child thyroid dose commitment. There are six parts to this attachment:

1. Child thyroid dose commitment from field measurements on air samples.
2. Child thyroid dose commitment from laboratory analyses of air samples.
3. Child thyroid/whole body dose commitment due to ingestion of contaminated drinking water, milk, and foodstocks.
4. Child thyroid dose commitment due to ingestion of contaminated milk (alternate method).
5. Whole body dose rate from standing on contaminated ground.
6. Estimation of off-site surface contamination based on release parameters.

C. PROCEDURE

1. Part 1 Child Thyroid Dose Commitment from Air Samples (Field Screening)

   1.1 The concentration of airborne iodine is calculated from field gross beta measurements of the cartridge and filter as described below. All activity in the filter is assumed to be I-131. The general forumla is:

$$\text{Concentration}_{(I-131)},\ \mu Ci/cc\ (\text{or } CI/m^3) = (1.59\ E\text{-}11)\ \frac{(C_s - C_b)}{(vol)(eff)(ceff)}$$

Where:

C_s	=	Sample count rate, cpm
C_b	=	Background count rate, cpm
vol	=	Air sample volume, Ft^3
eff	=	Instrument efficiency for I-131, cpm/dpm
ceff	=	Filter cartridge collection efficiency
1.59 E-11	=	Unit conversion, ft^3- Ci/cc-dpm (or ft^3-Ci/m^3-dpm)

1.2 For the E140/HP210 instrument and a silver zeoloite cartridge sample:

$$\text{Concentration}_{(I-131)}, \mu\text{Ci/cc} = (6.52\text{ E-10}) \frac{(C_s - C_b)}{(vol)}$$

1.3 For the E140/HP210 instrument and the particulate filter:

$$\text{Concentration}_{(I-131)}, \mu\text{Ci/cc} = (1.94\text{ E-10}) \frac{(C_s - C_b)}{(vol)}$$

1.4 For the E140/HP210 instrument and a charcoal sample:

$$\text{Concentration}_{(I-131)}, \mu\text{Ci/cc} = (1.35\text{ E-8}) \frac{(C_s - C_b)}{(vol)}$$

1.5 The child thyroid dose commitment from the measured I-131 is determined with the formula below:

$$\text{Dose} = 2.78\text{ E9 } (C_{szc} + C_{apf})$$

Where:

Dose = Child thyroid dose commitment, mrem per hour of inhalation at the measured concentrations

C_{szc} = I-131 concentration measured in the silver zeolite filter, μCi/cc (or use charcoal data.)

C_{apf} = I-131 concentration measured in the air particulate filter, μCi/cc

2.78 E9 = Child thyroid dose commitment factor, mrem-cc/μCi-hr.

1.6 Use Attachments 1 or 2, as appropriate, to document the assessment performed.

2. Part 2 Child Thyroid Dose Commitment from Air Samples (Lab Counting)

If the laboratory data is in terms of μCi/cc, use the formula in Step 1.5 to determine the associated child thyroid dose commitment. If the laboratory results are in other units, convert the results into μCi/cc with the appropriate conversion factors. For I-133, use a dose commitment factor of 6.59 E8 instead of 2.78 E9. The other iodine nuclides are relatively insignificant and can be ignored in this assessment. Document these data on Attachment 2.

3. Part 3 Thyroid/Whole Body Dose Commitment from Ingestion

Using Attachment 3 (Child) or Attachment 4 (Adult) as applicable, together with Attachment 5 determine the dose commitment due to the ingestion of contaminated milk, drinking water, meat/poultry, seafood/fish, and/or vegetables/fruits as described below. Use an Attachment 3(4) form for each sample type.

3.1 Enter the measured activity per unit of ingestion in column b of Tab 3(4). Units used are:

3.1.1	Drinking Water	μCi/cc
3.1.2	Milk	μCi/cc
3.1.3	Meat/Poultry	μCi/kg
3.1.4	Seafood/Fish	μCi/kg
3.1.5	Vegetables/Fruit	μCi/kg
3.1.6	pCi/l x 1 E-9 = μCi/cc; pCi/kg x 1 E-6 = μCi/kg	

3.2 If radiochemical analyses indicate the presence of radionuclides not listed on Attachment 3(4), refer to Appendix E, RG1.109 for additional dose commitment factors. Multiply the RG1.109 dose commitment factors by 1 E6 prior to use on Attachment 3(4).

3.3 For each radionuclide identified, multiply the value in column b by each respective conversion factor listed in columns c, e, and h, as appropriate, to obtain the dose attributable to that radionuclide. Enter the calculated dose in the respective column (d, f, or i).

3.4 Repeat Step 3.3 for each radionuclide identified.

3.5 Sum columns d and f individually and record the totals in the blocks provided. This is the mrem per unit ingested.

3.6 From column i, sum the dose for each organ of interest and record in the blocks provided. Note that an organ is identified only if its dose commitment is more restrictive than the whole body dose commitment.

3.7 Start an Attachment 5 for each sampling location and age group (adult/child) combination. Enter the date/time, sample location and sample type in the columns provided.

3.8 For a given sample type/age group combination, proceed as follows:

3.8.1 In the row identified as "mrem/unit" enter the mrem per unit ingested determined on Attachment 3(4) in the respective column for each major organ.

3.8.2 Enter the amount of ingestion per day in the row identified as "Ingestion" in each column having a value recorded in the "mrem/unit" row. If the ingestion is unknown, use the following typical values reported in RG 1.109. Other values may be appropriate, particularly if the actual ingestion is known.

	Child	Adult
Drinking water (tap water)	700	1100 cc/day
Milk	700	300 cc/day
Meat/Poultry	0.1	.25 kg/day
Seafood/Fish	0.007	0.02 kg/day
Vegtables/Fruit	0.55	0.52 kg/day

3.8.3 For each organ, multiply the mrem/unit by the ingestion to obtain the dose commitment from the ingestion.

3.9 Repeat Step 3.8 for each sample type.

3.10 For each major organ, sum the dose commitment of each sample type and record the results in the "Total Dose" row.

4. Part 4 Child Thyroid Dose Commitment from Milk (Alternate Method)

4.1 The table below provides conversion factors which were derived from ratios reported in 21 CFR 1090.4. To use the table, proceed as follows:

4.1.1 Locate the horizontal row in which there is a "1" in the column coresponding to the known variable.

4.1.2 Locate the conversion factor for the desired variable in the column corresponding to that variable.

4.1.3 Multiply the value of the known variable by the conversion factor found in Step 4.1.2. Infant uptake and infant dose assume ingestion over a day.

Air Conc. (Ci-sec/m^3)	Initial Deposition ($\mu Ci/m^2$)	Peak Pasture Activity (μCi/kg)	Maximum Milk Conc. (pCi/l)	Infant Uptake (pCI*)	Infant Thyroid Dose (mrem*)
1	1 E4	1.93 E4	8.57 E8	6.43 E9	1.07 E8
1 E-4	1	1.93	8.57 E4	6.43 E5	1.07 E4
5.19 E-5	5.19 E-1	1	4.44 E4	3.33 E5	5.55 E3
1.17 E-9	1.17 E-5	2.26 E-5	1	7.5	1.26 E-1
				1	1.66 E-2

*per day of ingestion of milk contaminated with I-131.

5. Part 5 Whole Body Dose Rate from Standing on Contaminated Ground

5.1 The dose rate from standing on ground contaminated with a single radionuclide is determined with the following expression:

Dose Rate, mrem/hour = DCF x Contamination Level

The contamination level used here must be the average level measured over a large area. This methodology cannot be used with a single smear result or direct reading. Doing so could lead to grossly overconservative or underconservative results.

5.2 Values of the dose conversion factor for gross activity and I-131 and I-133 are preprinted on Attachment 6 for both whole body and skin dose. Additional dose conversion factors are provided on Attachment 7.

5.3 The total dose rate is the sum of the dose rates of the individual radionuclides.

6. Part 6 Estimate of Contamination Levels from Release Parametres

Contamination levels offsite can be estimated with the formula below if there is no precipitation (rain/snow/hail).

$$C = (6\ E9)(Q)(X/Q)(t)$$

Where:

C = Contamination level in $pCi/100\ cm^2$

X/Q = Dispersion for sample location, sec/m^3

Q = Release rate, in Ci/sec. (Do not include noble gases in this release rate.)

t = Release time, in minutes

6 E9 = Unit conversion ($sec\text{-}pCi\text{-}m^2/min\text{-}Ci\text{-}100\ cm^2$) and 0.01 m/sec depositon.

D. ATTACHMENTS

1. Thyroid Dose Commitment from Air Sample Data--General
2. Thyroid Dose Commitment from Air Sample Data
3. Dose Commitment from Ingestion--Sheet 1
4. Dose Commitment from Ingestion--Sheet 2
5. Dose Commitment from Ingestion--Sheet 3
6. Dose Rate from Standing on Contaminated Ground
7. Dose Conversion Factors

THYROID DOSE COMMITMENT FROM AIR SAMPLE DATA — GENERAL

a	b	c	d	e	f	g	h	i	j	k	l	m	n
Date/ Time	Sample Location	Parameter	C_s (cpm)	C_b (cpm)	C_{net} (cpm)	Sample Volume (ft^3)	Detect. Eff.	Collect. Eff.	Conv. Factor	Conc. (μCi/cc)	Total Conc. (μCi/cc)	Conv. Factor	Total Exp* (mrem/ unit)
		Air Filter							1.59 E-11			#	
		Charcoal											
		AgZeolite											
		Air Filter							1.59 E-11			#	
		Charcoal											
		AgZeolite											
		Air Filter							1.59 E-11			#	
		Charcoal											
		AgZeolite											
		Air Filter							1.59 E-11			#	
		Charcoal											
		AgZeolite											
		Air Filter							1.59 E-11			#	
		Charcoal											
		AgZeolite											
		Air Filter							1.59 E-11			#	
		Charcoal											
		AgZeolite											
		Air Filter							1.59 E-11			#	
		Charcoal											
		AgZeolite											

*Exp = mrem per hour of inhalation of activity in column l

conversion factor = 2.78 E9

LOCATION: (ONSITE) (OFFSITE) **SURVEY ROUTE:** (NW) (SW) (NE) (SE) **DISTANCE:** (5) (10) miles **DATE:** ______________

CALCULATIONS BY: ______________________ **MONITORING TEAM LEADER:** ______________________

DOSE COMMITMENT FROM AIR SAMPLE DATA — E140/HP210 INSTRUMENT

a	b		c	d	e	f	g	h	i	j	k	l
Time	Survey Point	Closed Window mR/hr	Parameter	C_s (cpm)	C_b (cpm)	C_{net} (cpm)	Sample Volume (ft^3)	Conversion Factor	Conc. (µCi/cc)	Total Conc. (µCi/cc)	Conv. Factor	Total Dose* (mrem/hr)
			Air Filter					1.94 E-10				
			Charcoal					1.35 E-8			#	
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10				
			Charcoal					1.35 E-8			#	
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10				
			Charcoal					1.35 E-8				
			AgZeolite					6.52 E-10			#	
			Air Filter					1.94 E-10				
			Charcoal					1.35 E-8			#	
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10				
			Charcoal					1.35 E-8			#	
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10				
			Charcoal					1.35 E-8			#	
			AgZeolite					6.52 E-10				
			Air Filter					1.94 E-10				
			Charcoal					1.35 E-8			#	
			AgZeolite					6.52 E-10				

*Dose = mrem per hour of inhalation of activity in column j

conversion factor = 2.78 E9

f = d − e
i = f x h/g (AgZ, charcoal based on I-131, Part. based on Cs-137)
l = j x k (based on I-131)

DOSE COMMITMENT FROM INGESTION -- SHEET 1 -- CHILD

a	b	c	d	e	f	g	h	i
	uCi/cc	WHOLE BODY		GI TRACT (LLI)		ORGAN		
Cr51		.0089		.472		Thyroid	.0049	
Mn54		2.85		8.98		Liver	107	
Fe59		13.3		27.8				
Co57		No Data		No Data		No Data		
Co58		5.51		10.5				
Co60		15.6		29.3				
Zn65		22.7		6.41		Liver	36.5	
I131		9.83		1.54		Thyroid	5720	
I133		2.77		2.95		Thyroid	1360	
Zr95		.0227		26.6				
Nb95		.0063		16.2				
Mo99		3.29		11.0				
Tc99m		.03		1.03				
Cs134		81		2.07		Liver	384	
Cs137		46.2		1.96		Bone	327	
Ba140		4.85		42.1		Bone	83.1	
La140		.0012		98.4				
Ce141		.0029		24.7				
Sr89		37.7		51.1		Bone	1320	
Sr90		4310		229		Bone	17000	
H3		.203		.203		Thyroid	.203	

Thyroid Total	
Bone Total	
Liver Total	

DOSE COMMITMENT FROM INGESTION -- SHEET 2 — ADULT

a	b	c	d	e	f	g	h	i
	uCi/cc	WHOLE BODY		GI TRACT (LLI)		ORGAN		
Cr51		.0027		.669		Thyroid	.0016	
Mn54		.872		14.0				
Fe59		3.91		34.0				
Co57		No Data		No Data		No Data		
Co58		1.67		15.1				
Co60		4.72		40.2				
Zn65		6.96		9.7		Liver	15.4	
I131		3.41		1.57		Thyroid	1950	
I133		.753		2.22		Thyroid	363	
Zr95		.0066		30.9				
Nb95		.0019		21.0				
Mo99		.820		9.39				
Tc99m		.009		.413				
Cs134		121		2.59		Liver	148	
Cs137		71.4		2.11		Bone	79.7	
Ba140		1.33		41.8				
La140		.0003		92.5				
Ce141		.0007		24.2				
Sr89		8.84		49.4		Bone	308	
Sr90		1860		219		Bone	7580	
H3		.105		.105		Thyroid	.105	

Thyroid Total	
Bone Total	
Liver Total	

ADULT ☐

CHILD ☐

DOSE COMMITMENT FROM INGESTION--SHEET 3

Date/Time	Location	Sample Type	Parameter	Whole Body	Thyroid	GI-Tract	Liver	Bone
			mrem/unit					
			Ingestion					
			Dose,mrem					
			mrem/unit					
			Ingestion					
			Dose,mrem					
			mrem/unit					
			Ingestion					
			Dose,mrem					
			mrem/unit					
			Ingestion					
			Dose,mrem					
			mrem/unit					
			Ingestion					
			Dose,mrem					
			mrem/unit					
			Ingestion					
			Dose,mrem					
			mrem/unit					
			Ingestion					
			Dose,mrem					
			Total Dose					

*If ingestion is unknown, use values in Tab 11

DOSE FROM STANDING ON CONTAMINATED GROUND

Contamination levels used in this section must be the average level measured over a large area. This methodology cannot be used with a single smear result or direct reading. Doing so could result in grossly overconservative or underconservative results.

Sample Location: ______________________________ Date/Time ______________

Sample Identification ____

Nuclide	Contamination pCi/100 cm ^{2}	Conv. Factor*	Dose Rate mrem/hr	Comment
Gross		1.7 E-6		Whole Body
Gross		2.0 E-6		Skin
	pCi/100 cm ^{2}			
I-131		2.8 E-7		Whole Body
I-131		3.4 E-7		Skin
I-133		3.7 E-7		Whole Body
I-133		4.5 E-7		Skin
		Total		Whole Body
		Total		Skin

*From Tab 7

Attachment 7

DOSE CONVERSION FACTORS

Contaminated Ground to Whole Body/Skin Dose

$$\frac{\text{mrem} - 100\ \text{cm}^2}{\text{hr-pCi}}$$

NUCLIDE	WHOLE BODY	SKIN
NA24	2.5 E-6	2.9 E-6
CR51	2.2 E-8	2.6 E-8
MN54	5.8 E-7	6.8 E-7
MN56	1.1 E-6	1.3 E-6
FE59	8 E-7	9.4 E-7
CO58	7 E-7	8.2 E-7
CO60	1.7 E-6	2 E-6
NI65	3.7 E-7	4.3 E-7
CU64	1.5 E-7	1.7 E-7
ZN65	4 E-7	4.6 E-7
BR83	6.4 E-9	9.3 E-9
BR84	1.2 E-6	1.4 E-6
RB86	6.3 E-8	7.2 E-8
RB88	3.5 E-7	4 E-7
RB89	1.5 E-6	1.8 E-6
SR89	5.6 E-11	6.5 E-11
SR91	7.1 E-7	8.3 E-7
SR92	9 E-7	1 E-6
Y90	2.2 E-10	2.6 E-10
Y91M	3.8 E-7	4.4 E-7
Y91	2.4 E-9	2.7 E-9
Y92	1.6 E-7	1.9 E-7
Y93	5.7 E-8	7.8 E-8
ZR95	5 E-7	5.8 E-7
ZR97	5.5 E-7	6.4 E-7
NB95	5.1 E-7	6 E-7
MO99	1.9 E-7	2.2 E-7
TC99M	9.6 E-8	1.1 E-7
TC101	2.7 E-7	3 E-7
RU103	3.6 E-7	4.2 E-7
RU105	4.5 E-7	5.1 E-7
RU106	1.5 E-7	1.8 E-7
AG110M	1.8 E-6	2.1 E-6
TE125M	3.5 E-9	4.8 E-9
TE127M	1.1 E-10	1.3 E-10
TE127	1 E-9	1.1 E-9
TE129M	7.7 E-8	9 E-8
TE129	7.1 E-8	8.4 E-8
TE131M	8.4 E-7	9.9 E-7
TE131	2.2 E-7	2.6 E-4
TE132	1.7 E-7	2 E-7
I130	1.4 E-6	1.7 E-6
I131	2.8 E-7	3.4 E-7
I132	1.7 E-6	2 E-6
I133	3.7 E-7	4.5 E-7
I134	1.6 E-6	1.9 E-6
I135	1.2 E-6	1.4 E-6
CS134	1.2 E-6	1.4 E-6
CS136	1.5 E-6	1.7 E-6
CS137	4.2 E-7	4.9 E-7
CS138	2.1 E-6	2.4 E-6
BA139	2.4 E-7	2.7 E-7
BA140	2.1 E-7	2.4 E-7
BA141	4.3 E-7	4.9 E-7
BA142	7.9 E-7	9 E-7
LA140	1.5 E-6	1.7 E-6
LA142	1.5 E-6	1.8 E-6
CE141	5.5 E-8	6.2 E-8
CE143	2.2 E-7	2.5 E-7
CE144	3.2 E-8	3.7 E-8
PR144	2 E-8	2.3 E-8
ND147	1 E-7	1.2 E-7
W187	3.1 E-7	3.6 E-7
NP239	9.5 E-8	1.1 E-7

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INTEGRATED DOSE ASSESSMENT

A. PREREQUISITES

The following data must be available for this tab:

1. Documented field monitoring and sampling results, and in particular, data from applicable attachments in Tab 11.

B. PROCEDURE

1. Attachment 1 Cumulative Exposure from Plume

1.1 A separate data table will be maintained for each location that is sampled during an emergency condition.

1.2 From dose projection sources -- Tabs 6,7,8,9, and/or 10, transcribe the date and time of the sample or evaluation in column a.

1.3 In the first row (Dose Rate) of column c, enter the projected whole body dose rate, in mrem/hour. If only dose (mrem) is known, enter this in the third row (Dose).

1.4 In the first row of column d, enter the projected child thyroid dose rate, in mrem/hour (of inhalation). If only dose (mrem) is known, enter this in the third row.

1.5 The ΔT value is the time increment, in hours, between calculations or measurements at a given location. The ΔT for the initial calculation will be the time from the beginning of the release up to the first calculation at the location of interest.

1.6 Calculate and record both whole body and thyroid "dose" by multiplying ΔT by the respective projected dose rates.

1.7 If field measurement data is available, proceed as follows:

1.7.1 In column e, enter the observed external whole body dose rate as reported by the monitoring teams. In column f, enter the child thyroid dose commitment, in mrem per hour of inhalation (assume release time = inhalation time).

1.7.2 In each column, enter the ΔT since the last measurement.

1.7.3 Calculate and record the whole body dose and child thyroid dose commitment in the respective columns.

1.8 Determine cumulative doses as follows:

1.8.1 Field measurements are preferred over dose projections, however, if field measurements have not yet been obtained, the projected integrated dose can be determined by using the dose projection data.

1.8.2 For both whole body and child thyroid, add the selected doses--columns c and d/e and f--to the last cumulative values recorded in the respective columns g and h. For long term releases, start a new data sheet daily with the cumulative dose reset to "0".

1.9 When each sheet is filled, enter the last cumulative whole body and child thyroid values in the respective blocks labeled "Totals this Sheet". If there is more than one sheet per day, add totals to the totals on the previous sheets and enter the results in the "Daily Totals" blocks.

1.10 If a particular dose rate parameter is not determiend at each sampling/monitoring, the previous value for that parameter is assumed to prevail during that time increment. Dose and cumulative dose for that parameter will be calculated using the assumed prevailing dose rate.

1.11 Periodically transmit cumulative results to the Emergency Director for comparison to the protective action guides (PAGs).

2. Attachments 2 and 3 Whole Body and Child Thyroid Cumulative Exposure

2.1 Attachments 2 and 3 will be used once daily for any particular accident. The purpose of Attachments 2 and 3 is to provide a means to factor the internal dose commitment from the ingestion pathway in with the dose commitment from inhalation (and for the whole body, the external direct radiation dose). Initially in an accident, the inhalation and direct radiation exposure pathways will predominate. However, after passage of the plume, the ingestion pathway can predominate if no protective measures are taken to limit the distribution of contaminated foodstocks, drinking water, and milk. Also, the ingestion pathways may not reach peak activity for some days after the release has terminated. Since ingestion is not a continuous process like inhalation, the dose commitment is calculated on a daily basis.

2.2 Attachment 2 is used for whole body cumulative exposure. Attachment 3 is used for child thyroid cumulative exposure. The instructions which follow are written from the standpoint of Attachment 2, however, they equally apply to Attachment 3.

2.3 Enter the date and sampling location in columns a and b respectively.

2.4 In the remaining columns, enter the data described below:

2.4.1 In column c (Attachment 2 only) enter the external whole body dose from column g of Attachment 1. Add external dose from surface contamination (Attachment 6 Tab 11), if the dose is greater than 10% of the plume exposure dose.

2.4.2 In column d (Attachment 3 only) enter the thyroid dose due to inhalation from column h Attachment 1.

2.4.3 In column e enter the whole body dose commitment from contaminated milk (Attachment 5 Tab 11).

2.4.4 In column f, enter the whole body dose commitment from contaminated meat/poultry (Attachment 5 Tab 11).

2.4.5 In column g, enter the whole body dose commitment from contaminated fish/seafood (Attachment 5 Tab 11).

2.4.6 In column h, enter the whole body dose commitment from contaminated drinking water (Attachment 5 Tab 11).

2.5 Sum the doses, mrem, recorded in columns c through h and enter the result in column i.

2.6 Add this daily total to the cumulative total from previous days and record this value in column j.

2.7 Repeat Steps 3.2.3 through 3.2.6 for other sampling/monitoring locaitons.

3. Retain all data forms for subsequent evaluation. Ensure that all forms are completed so as to ensure capability to reconstruct events at a future date.

C. ATTACHMENTS

1. Attachment 1 Cumulative Exposure from Plume
2. Attachment 2 Whole Body Cumulative Exposure
3. Attachment 3 Child Thyroid Cumulative Exposure

INTENTIONALLY BLANK

Location: ____________________

Attachment 1

CUMULATIVE EXPOSURE FROM PLUME

a	b	c	d	e	f	g	h
		Dose Projection		Field Measurement		Cumulative	
Date/ Time	Parameter	External Whole Body	Child Thyroid	External Whole Body	Child Thyroid	External Whole Body (mrem)	Child Thyroid (mrem)
	Dose Rate						
	ΔT						
	Dose						
	Dose Rate						
	ΔT						
	Dose						
	Dose Rate						
	ΔT						
	Dose						
	Dose Rate						
	ΔT						
	Dose						
	Dose Rate						
	ΔT						
	Dose						
	Dose Rate						
	ΔT						
	Dose						
					Totals this Sheet		
					Daily Totals		
					Transfer Data to:	Att. 2 col c	Att. 3 col d

CHILD THYROID CUMULATIVE EXPOSURE

Date	Location	External (mrem)	Inhalation (mrem)	Ingestion				Daily Total (mrem)	Cumul. Total (mrem)
				Milk (mrem)	Meat/ Poultry (mrem)	Fish/ Seafood (mrem)	Drinking Water (mrem)		
a	b	c	d	e	f	g	h	i	j

DOSE PROJECTION --- SHORT FORM

A. OBJECTIVE

This procedure provides guidance and instructions to shift personnel for estimating offsite doses resulting from an unplanned and/or unmonitored airborne release of radioactive material. This procedure implements the more extensive guidance of EPP/IP-2.6 into a short-form procedure suitable for initial dose projection activities prior to activation of the Technical Support Center. The EA and DP Coordinator is responsible to ensure that the actions in this procedure are implemented, if necessary.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan, and;
2. A release of radioactive material in excess of environmental technical specifications has occurred or is expected to have occurred, and;
3. The following meteorological parameters must be known:
   - 3.1 Wind speed (mph) at 35' (analog recorder SDR-MT-600 or Terminet)
   - 3.2 Wind Direction at 35' (analog recorder SDR-MT-600 or Terminet)
   - 3.3 Delta-T (T_1) for 150'-35' (analog recorder SDR-MT-202 or Terminet)
4. The release parameters, as measured on gaseous effluent monitors, and/or the accident classification must be known.

If prerequisites 3 and/or 4 cannot be met, alternate methods provided in EPP/IP-2.6 must be used.

C. PRECAUTIONS

1. The wind direction as indicated on the analog recorders and the Terminet, or as used in reporting meteorological data between the station and offsite agencies is the wind direction <u>from which the wind is coming</u>. It is <u>NOT</u> the direction to which the plume is headed. Add 180° to the observed wind direction to determine the initial plume travel direction.

2. Meteorological parameters (ie: wind speed, wind direction, delta-T), observed at elevations other than those specified herein, cannot be substituted for the parameters at the specified elevation without error or most cases.

3. When using the monitored release dose calculation portion of this procedure, ensure that the worksheet being used is the sheet appropriate for the effluent monitor being read. The calibrated efficiencies of the installed Victoreen effluent monitors, the interim Eberline SA-9, and the interim Eberline SA-10, are significantly different from each other.

D. DISCUSSION -- GUIDANCE AND CRITERIA

1. This EPP/IP is based on conversative methodologies which provide rapid and reasonably appropriate estimates of the offsite dose commitment, and from these estimates, provide an appropriate protective action recommendation for the general public offsite. Because of the complex terrain surrounding the Beaver Valley Power Station, it would be extremely difficult to calculate "true" offsite dose commitments in a hand calculational method. Thus, the dose projections made using these methodologies must be verified as soon as possible with offsite radiological survey data. However, the implementation of required protective actions offsite cannot be delayed pendcng the results of these surveys. This procedure provides the means to determine the appropriate data to relay to offsite agencies, in an interim manner, until such time as a computerized site-specific model can be developed and then as a back-up when the system is inoperative.

2. The estimated dose commitments and recommended protective actions are relayed to state and county agencies in Pennsylvania, Ohio, and West Virginia. Although the respective states have the responsibility to evaluate the Duquesne Light recommended action and then to recommend a course of action to the individual counties, the technical ability of the states to perform such evaluations may be initially limited. Thus, the Duquesne Light recommendation may be implemented without extensive offsite review. For these reasons, Duquesne Light personnel making these determinations must ensure that the calculations performed are accurate. Further, only the Emergency Direcotr (Shift Supervisor, initially) has the authority to approve the making of a protective action recommendation to offsite agencies.

E. PROCEDURE

1. General Method

1.1 In the event of a known or suspected airborne release of radioactive materials greater than BVPS Technical Specificaitons, immediately ascertain if a release did in fact take place (or will take place imminently). If a release did take place, or will take place, proceed with the remaining steps in this procedure.

1.2 Determine the approximate magnitude of the release. Further dose projections should be performed based on these preliminary estimates and the following criteria:

1.2.1 For all monitored release in the Unusual Event emergency classification, dose projections in accordance with this procedure need not be performed as a general rule, due to the minimal offsite significance of such releases. Post-accident evaluation of offsite doses for releases in the Unusual Event category may be necessary to comply with environmental technical specificatons. In these cases, the offsite doses may be calculated using the methodology provided for determining the impact of routine radiological releases.

1.2.2 For all other releases, dose projection shall be performed.

1.3 Determine the appropriate ground level dispersion factor (X/Q -- "Chi over Q") for the site boundary initially, and other downwind distance as necessary based upon consideration of wind speed, magnitude of release, precipitation, population density, etc. If the site boundary dose commitment exceeds the guidance of Step 1.5 of this procedure, the X/Q (and the associated dose commitment) at the 2 mile radius, and other distances as necessary, shall be calculated. Attachment 1 is a worksheet for the X/Q determinations, and provides instructions for determining the X/Q values.

1.4 Based on the known parameters about the incident and availability of data, utilize one of the two dose calculation methods provided below. Specifically, use:

1.4.1 Attachment 2 to determine the dose commitment based on the FSAR postulated accident analysis, if the release is unmonitored. If the accident cannot be classified, assume fuel handling accident parameters.

1.4.2 Attachment 3, 4, or 5 (depending on the instrument monitoring the release) to determine the dose commitment based on the monitor indication. If the accident cannot be classified, use fuel handling accident parameters.

1.5 Determine and recommend protective actions as follows:

1.5.1 If the calculated projected dose commitment does not exceed 170 mrem to either the whole body or to the child thyroid, NO protective action recommendation shall be given.

1.5.2 If the calculated projected dose commitment exceeds 170 mrem to either the whole body or child thryoid, but is less than either 1 rem whole body or 25 rem child thyroid, SHELTERING shall be recommended as a protective action.

1.5.3 If the projected calculated dose commitment exceeds 1 rem whole body or 25 rem child thyroid, EVACUATION shall be recommended as a protective action.

1.5.4 If doses in excess of those specified above exist beyond the site boundary, the recommendation shall be made for a minimum 2 mile radius circle around the station.

1.5.5 If dose commitments in excess of those specified above exist beyond this minimum 2 mile ring, the recommendation shall be made for a radial wedge extending beyond the 2 mile radius circle to either 5 miles or 10 miles as required by the projected dose commitments.

1.5.6 In the case of an evacuation of the 2-mile radius circle and/or a 5 mile radial wedge, it may be appropriate (based on projected dose commitment) to recommend sheltering in the radial wedge beyond the area for which evacuation is recommended. Thus, a recommendation may be: "evacuation in a 2-mile radius circle, sheltering in radial sectors out to 5 or 10 miles".

1.5.7 Because of uncertainties associated with the movement of the plume in the BVPS environs, the 35' wind direction cannot be used alone to determine the size and location of the radial wedge. Attachment 6 provides a decisional aid to determine the size and location of a required wedge. (Actual decisional aids provided in emergency supplies at ECC, TSC, and EOF. Reproduction of aid included in procedure.)

1.6 Relay the dose projection results and the applicable recommended protective action, if any, to the following offsite authorities as part of the initial notification and follow-up notifications. These agencies should be notified immediately of any signficant change in dose projection results.

1.6.1 Beaver County Emgrgency Management Agency (Intitial recommendation only)

1.6.2 Pennsylvania Emergency Management Agency (Initial recommendation only)

1.6.3 DER/Bureau of Radiation Protection (White Phone--all data and recommendations for Pennsylvania residents following activation)

1.6.4 Columbiana County Disaster Services Agency (Initial and subsequent recommendations)

1.6.5 Hancock County Office of Emergency Services (Initial and subsequent recommendations)

1.6.6 USNRC (via black phone)

Upon being activated, the following agencies may request data and recommendations via telephone or thru EOF personnel:

1.6.7 WV Office of Emergency Services/WV Department of Health

1.6.8 Ohio Disaster Services Agency/Ohio Department of Health

1.6.9 Federal Emergency Management Agency/Department of Energy

1.7 Document all calculations on supplied data sheets. Ensure that the date and time are clearly identified on the calculation sheet.

1.8 Continue dose projection activities as long as the release is ongoing or imminent, refining earlier projections if possible, in accordance with this procedure until the designated Environmental Assessment and Dose Projection Coordinator arrives, or when the emergency condition is terminated, whichever comes first.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing procedures, Specifically:

   EPP/IP-2.6, "Dose Projection"

   EPP/IP-4.1 "Offsite Protective Actions"

2. Title 10 Code of Federal Regulations Parts 20 and 50
3. EPA 520/1-75-001 "USEPA Manual for Protective Action Guides and Protective Actions for Nuclear Power Incidents"
4. Beaver Valley Power Station FSAR Chapter 14
5. NUREG-0654/FEMA REP-1 "Criteria for Preparation and Evaluation or Radiolgocial Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"
6. NRC Inspection Report 50-334 #81-27 (This procedure and the methodology contained herein is an interim response to an inspection comment.)

G. ATTACHMENTS

1. X/Q Worksheet, Instructions, Xu/Q Graph, Stability Class Overlay (reproduction)
2. FSAR Accident Dose Commitment Worksheet
3. RM-VS-107 Monitored Release Worksheet
4. RM-VS-112 Low Range (SA-10) Monitored Release Worksheet
5. RM-VS-112 High Range (SA-9) Monitored Release Worksheet
6. RM-MS-100 ABC, RM-MS 101, RASMOS Worksheet
7. Downwind Affected Area Decisional Aid (reproduction)

X/Q WORKSHEET

Observed 35' wind speed: ________________ (analog recorder SDR-MT-600 or Terminet)

Observed 150'-35' Stability Class: _________ (See instructions below, or Terminet)

Xu/Q Values for Selected Distances

Stability	EAB	2 mile	5 mile	10 mile
ABC	1.2 E-4	4.5 E-6	7.2 E-7	1.8 E-7
D	5.5 E-4	4.7 E-5	1.2 E-5	4.4 E-6
E	9.3 E-4	9.9 E-5	2.8 E-5	1.1 E-5
FG	1.5 E-3	2.2 E-4	6.7 E-5	2.8 E-5

EAB: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

2.0 mi: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

5.0 mi: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

10 mi: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

_____ mi: ______________ divided by wind speed: _____ mph = X/Q = ________ sec/m^3

INSTRUCTIONS

1. Observe and record the 35' elevation wind speed, in miles per hour, as indicated on the Terminet, or on analog recorder SDR-MT-600.

2. Determine the stability class appropriate for the 150'-35' elevation. The stability class can be directly read off of the Terminet print-out. Alternately, the stability class can be determined from the multi-point alanlog recorder XR-MT-201, as follows:

   2.1 Remove the plastic stability class overlay from the Shift Supervisors controlled copy of this procedure. (Other copies have a paper reproduction overlay.

If the overlay is not available, the delta-T range appropriate to each stability class is identified on the graph attached.)

2.2 Open the recorder bezel and place the overlay over the chart paper, aligning the zero on the overlay with the scale zero on the recorder paper.

2.3 Note the latest (topmost) black (pen 1) trace on the recorder in relation to the delta-T_1) (ΔT_1) stability scale on the overlay. This is the stability class.

<u>Note</u>

The chart paper, recorder scale, and the overlay have two delta-T scales -- one for 150'-35' (ΔT_1) and one for 500'-35' (ΔT_2). ensure that the ΔT_1 scale (-4 to +8) are being used.

3. Only four stability classes are used for emergency purposes. Terminet classes A, B, and C, are represented as class ABC. Terminet classes F and G are represented as class FG. Record the stability class.

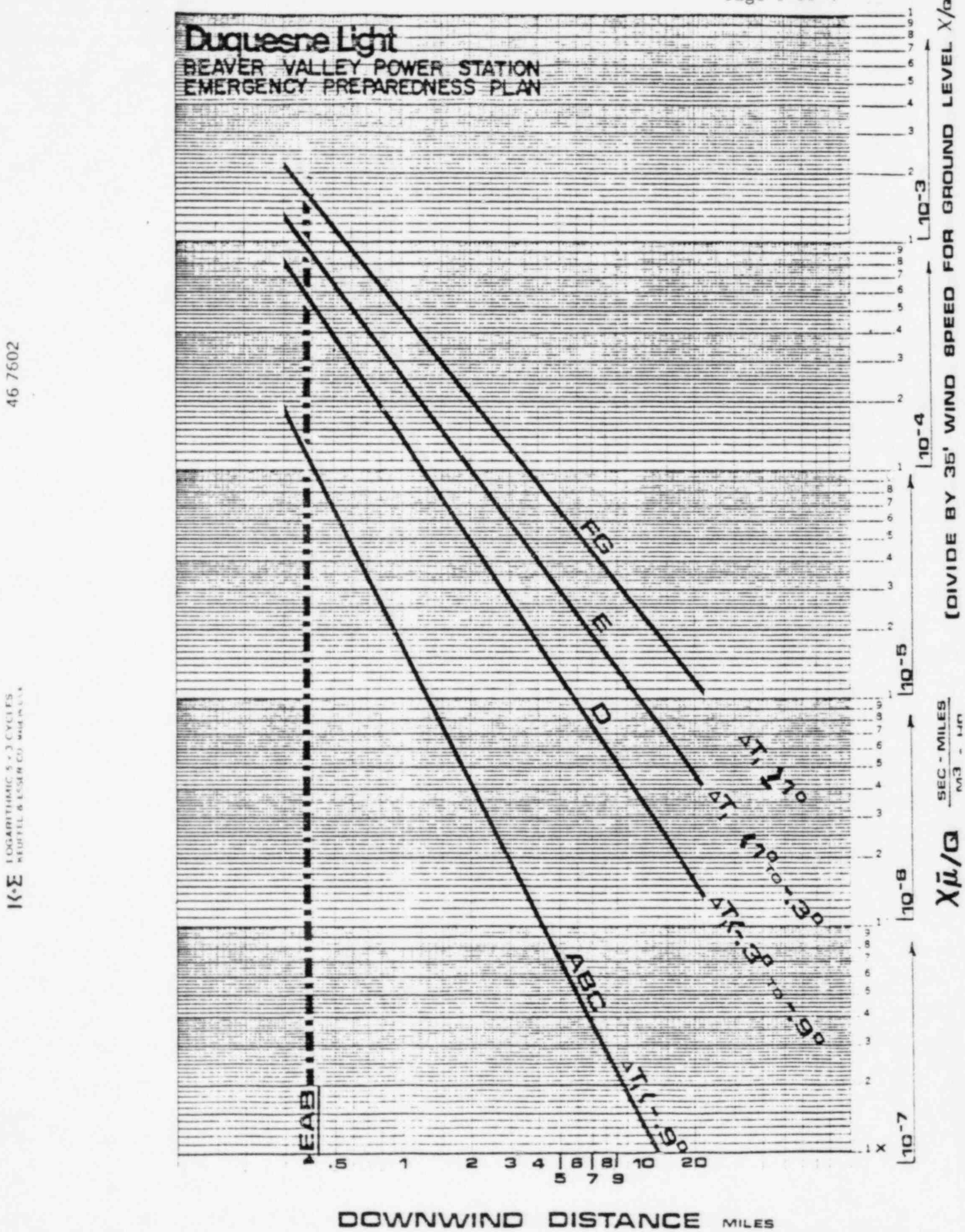
4. For the site boundary (EAB) location initially, and for other distances if the site boundary dose commitment indicates the need, determine a value of X/Q as follows. Note that the dose commitment is at a maximum at the site boundary and decreases with distance.

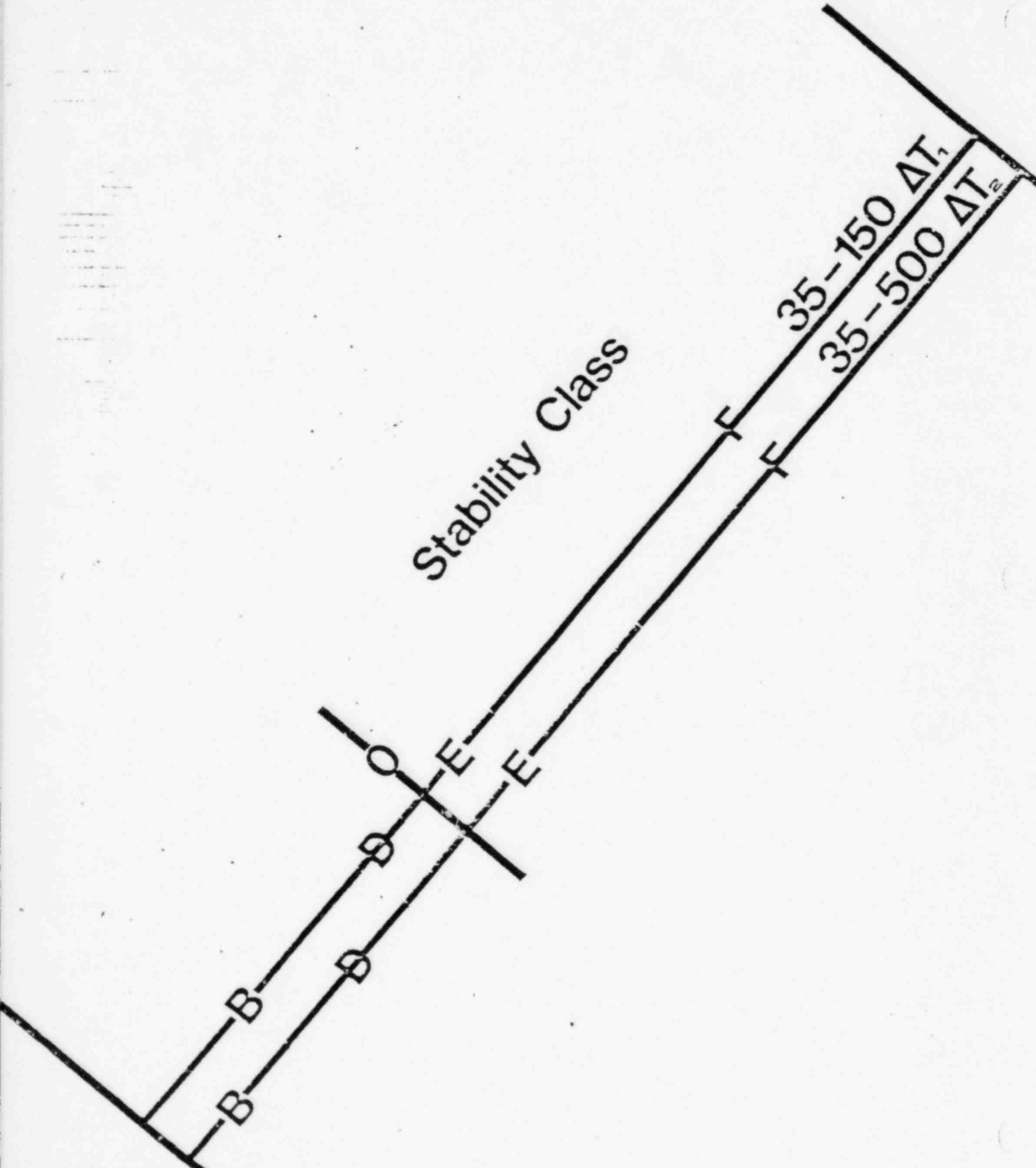
4.1 Using the stability class recorded in step 3, identify the values of Xu/Q for the distance specified from the provided, or for other optional distances using attached graph. Record these Xu/Q values in the spaces provided.

4.2 From step 1, record the current wind speed in the space provided for each distance to be evaluated.

4.3 Divided the Xu/Q value by the wind speed to obtain the value of X/Q. Record these X/Q values in the space provided for each distance.

4.4 Use the calculated X/Q values in the appropriate worksheets as described in Attachments 2, 3, 4, or 5.


Duquesne Light
BEAVER VALLEY POWER STATION
EMERGENCY PREPAREDNESS PLAN
FG
E
D
ABC
EAB
ΔT, ≥ 1°
ΔT, 1° TO -.3°
ΔT, -.3° TO -.9°
ΔT, < -.9°
.5
1
2
3
4
5
6
7
8
9
10
20
DOWNWIND DISTANCE MILES
10-3
10-4
10-5
10-6
10-7
Xū/Q SEC - MILES / M3 - HR
(DIVIDE BY 35' WIND SPEED FOR GROUND LEVEL X/Q)
46 7602
K-E LOGARITHMIC 5 x 3 CYCLES KEUFFEL & ESSER CO.


Stability Class
35-150 ΔT1
35-500 ΔT2
B
D
E
F
B
D
E
F

Date: ____________________

Time: ____________________

Name: ____________________

	ACCIDENT	X/Q [1]		Dose Factor Whole Body Child Thyroid		DOSE, rem Whole Body Child Thyroid
SITE BOUNDARY (EAB, .38 mi)	Volume Control Tank Rupture		X	1.99 E1 Negligible	=	 negligible
	Gas Surge Tank Rupture		X	1.68 Negligible	=	 Negligible
	S/G Tube Rupture		X	1.42 E2 1.69 E3	=	
	Main Steam Line Break		X	2.87 E-2 2.3 E2	=	
	Fuel Handling Accident		X	1.12 E4 1.87 E5	=	
	Loss of Coolant Accident		X	2.8 E3 8.25 E4	=	
	DISTANCE	**X/Q [1]**		**Dose Factor [2]** Whole Body Child Thyroid		**DOSE, rem** Whole Body Child Thyroid
	2 Mile		X		=	
	5 Mile		X		=	
	10 Mile		X		=	
	Other _____ miles		X		=	

[1] From Attachment 1

[2] From blocks above.

INSTRUCTIONS

1. Classify the type of accident which has occurred from the six accidents identified on the front of this calculation worksheet. If no classification is possible, use the fuel handling accident calculation.

2. From the X/Q worksheet, transfer the X/Q value for the EAB to the appropriate space on the calculation worksheet.

3. Multiply the X/Q value by the correction factor for that accident, for both whole body and child thyroid dose (if applicable), to obtain the projected dose rate at the EAB. Enter the projected dose(s) in the space(s) provided.

4. For each additional distance to be calculated, enter the distance (if not already entered) at which the whole body and thyroid doses are to be calculated and enter the appropriate dose factor in the spaces provided on the worksheet. Repeat steps 2 and 3 for each additional distance

5. Enter the date, time and initials of the person who performed the calculation in the spaces provided. Retain this form for subsequent review and evaluation.

FOR MONITORS RM-VS-107B
RM-GW-108B

RELEASE RATE

a		b		c		d	
	X		X		=		Release* Rate Ci/sec
Monitor CPM		Flow rate, CFM					

Conversion Factors

VCT Rupture	6.19 E-12
GST Rupture	6.13 E-12
MSL Break	1.24 E-11
FH Accident	1.47 E-11
WGDT Release	3.05 E-10
LOCA	4.50 E-12

DOSE CALCULATION

Distance (miles)	d Release Rate (Ci/sec)		e X/Q** (sec/m^3)		f Dose Factor Whole Body / Child Thyr.		g Dose Rate (R/hr)		h Proj. Time (hrs)		i Dose (rem)
Site Boundary EAB		X		X		=		X		=	
				X		=		X		=	
2.0		X		X		=		X		=	
				X		=		X		=	
5.0		X		X		=		X		=	
				X		=		X		=	
10.0		X		X		=		X		=	
				X		=		X		=	
Other ____		X		X		=		X		=	
				X		=		X		=	

Dose Factors

VCT Rupture	1.08 E1 / Negl.	GST/WGDT Rupt.	3.39 / Negl.
		MSL Break	5.91 E1 / 4.78 E5
Fuel Handling	3.12 E1 / 5.09 E2	Loss of Coolant	8.4 E2 / 2.52 E4

**From Attachment 1

Date: ____________ Time: ____________ am/pm Name: ____________

INSTRUCTIONS

1. Classify the type of accident which has occurred from the accidents identified on the next page. If no accident classification can be made, choose the fuel handling accident.

2. Obtain a copy(s) of the worksheet appropriate to the calculation. There are three different worksheets and copies of each are available in the emergency cabinets in the Control Room and TSC/EOF.

   2.1 Attachment 3 For use with RM-VS107/GW108
   2.2 Attachment 4 For use with RM-VS112/GW110 (LR)
   2.3 Attachment 5 For use with RM-VS112/GW110 (HR)

3. If not already done, enter the distance at which the whole body and thyroid doses are to be calculated in the spaces provided on the worksheet.

4. Record the actual count rate on the indicated monitor in block a on the worksheet.

5. Record the actual release flow rate (cfm) as indicated on the specified instrument in block b.

6. Transfer the X/Q value applicable to the present meteorological conditions and the dose point of interest from the X/Q worksheet (Attachment 1). Record this value in block e.

7. From the table on the worksheet, enter the appropriate monitor cpm to release rate conversion factor in block c.

8. Multiply the observed monitor reading (block. a) by the release flow rate (block b). Multiply the result by the conversion factor (block c), and record the release rate in block d.

9. From the table on the worksheet, enter the applicable dose conversion factors in the appropriate block f -- the upper value for whole body, the bottom value for the child thyroid.

10. Multiply the calculated release rate (block. d) by the observed X/Q (block. e). Multiply this result by the whole body dose factor (block f top) and record the dose rate in block g (top).

11. Multiply the block (d) x (e) value by the child thyroid dose factor (block f lower) and record the result in block h (lower).

12. Determine, or project, the duration of the release at the current release rate. Record this value on the worksheet in block h. If a reasonable estimate of the duration is unknown, use one hour for the initial projection, and update the projection appropriately as better data becomes available.

13. Multiply the individual dose rate(s) (block g) by the release duration (block h), and record the projected dose(s) in block i.

14. If the dose commitments for other downwind distances are desired for the same instrument readings, repeat steps 6 through 13, using the spare blocks, for each additional distance desired. If the instrument readings change, obtain a new worksheet, and rework the solution completely.

Duquesne Light

FOR MONITORS RM-VS-112 (LR)
RM-GW-110 (LR)
(SA-10)

RELEASE RATE

a		b		c		d	
	X		X		=		Release* Rate Ci/sec
Monitor CPM		Flow rate, CFM					

Conversion Factors

VCT Rupture	2.12 E-8
GST Rupture	5.71 E-8
MSL Break	3.17 E-9
FH Accident	4.77 E-9
WGDT Release	5.71 E-8
LOCA	3.32 E-10

DOSE CALCULATION

	d		e		f		g		h		i
Distance (miles)	**Release Rate** (Ci/sec)		**X/Q**** (sec/m³)		**Dose Factor** Whole Body / Child Thyr.		**Dose Rate** (R/hr)		**Proj. Time** (hrs)		**Dose** (rem)
Site Boundary EAB		X		X		=		X		=	
				X		=		X		=	
2.0		X		X		=		X		=	
				X		=		X		=	
5.0		X		X		=		X		=	
				X		=		X		=	
10.0		X		X		=		X		=	
				X		=		X		=	
Other ____		X		X		=		X		=	
				X		=		X		=	

Dose Factors

VCT Rupture	1.08 E1 Negl.	GST/WGDT Rupt.	3.39 Negl.
		MSL Break	5.91 E1 4.78 E5
Fuel Handling	3.12 E1 5.09 E2	Loss of Coolant	8.4 E2 2.52 E4

**From Attachment 1

Date: ____________ Time: ____________ am/pm Name: ____________

INSTRUCTIONS

1. Classify the type of accident which has occurred from the accidents identified on the next page. If no accident classification can be made, choose the fuel handling accident.

2. Obtain a copy(s) of the worksheet appropriate to the calculation. There are three different worksheets and copies of each are available in the emergency cabinets in the Control Room and TSC/EOF.

   2.1 Attachment 3 For use with RM-VS107/GW108
   2.2 Attachment 4 For use with RM-VS112/GW110 (LR)
   2.3 Attachment 5 For use with RM-VS112/GW110 (HR)
   2.4 Attachment 6 for use with RM-MS-100 ABC, RM-MS-101, RASMOS.

3. If not already done, enter the distance at which the whole body and thyroid doses are to be calculated in the spaces provided on the worksheet.

4. Record the actual count rate on the indicated monitor in block a on the worksheet.

5. Record the actual release flow rate (cfm) as indicated on the specified instrument in block b.

6. Transfer the X/Q value applicable to the present meteorological conditions and the dose point of interest from the X/Q worksheet (Attachment 1). Record this value in block e.

7. From the table on the worksheet, enter the appropriate monitor cpm to release rate conversion factor in block c.

8. Multiply the observed monitor reading (block. a) by the release flow rate (block b). Multiply the result by the conversion factor (block c), and record the release rate in block d.

9. From the table on the worksheet, enter the applicable dose conversion factors in the appropriate block f -- the upper value for whole body, the bottom value for the child thyroid.

10. Multiply the calculated release rate (block. d) by the observed X/Q (block. e). Multiply this result by the whole body dose factor (block f top) and record the dose rate in block g (top).

11. Multiply the block (d) x (e) value by the child thyroid dose factor (block f lower) and record the result in block h (lower).

12. Determine, or project, the duration of the release at the current release rate. Record this value on the worksheet in block h. If a reasonable estimate of the duration is unknown, use one hour for the initial projection, and update the projection appropriately as better data becomes available.

13. Multiply the individual dose rate(s) (block g) by the release duration (block h), and record the projected dose(s) in block i.

14. If the dose commitments for other downwind distances are desired for the same instrument readings, repeat steps 6 through 13, using the spare blocks, for each additional distance desired. If the instrument readings change, obtain a new worksheet, and rework the solution completely.

FOR MONITORS RM-VS-112 (HR)
RM-GW-110 (HR)
(SA-9)

RELEASE RATE

a		b		c		d	
	X		X		=		**Release* Rate** Ci/sec
Monitor CPM		Flow rate, CFM					

Conversion Factors

VCT Rupture	7.71 E-5
GST Rupture	2.08 E-4
MSL Break	1.15 E-5
FH Accident	1.73 E-5
WGDT Release	2.08 E-4
LOCA	1.21 E-6

DOSE CALCULATION

	d		e		f		g		h		i
Distance (miles)	Release Rate (Ci/sec)		X/Q** (sec/m³)		Dose Factor: Whole Body / Child Thyr.		Dose Rate (R/hr)		Proj. Time (hrs)		Dose (rem)
Site Boundary EAB		X		X		=		X		=	
				X		=		X		=	
2.0		X		X		=		X		=	
				X		=		X		=	
5.0		X		X		=		X		=	
				X		=		X		=	
10.0		X		X		=		X		=	
				X		=		X		=	
Other ____		X		X		=		X		=	
				X		=		X		=	

Dose Factors

VCT Rupture	1.08 E1 Negl.	GST/WGDT Rupt.	3.39 Negl.
		MSL Break	5.91 E1 4.78 E5
Fuel Handling	3.12 E1 5.09 E2	Loss of Coolant	8.4 E2 2.52 E4

**From Attachment 1

Date: ____________ Time: ____________ am/pm Name: ____________

INSTRUCTIONS

1. Classify the type of accident which has occurred from the accidents identified on the next page. If no accident classification can be made, choose the fuel handling accident.

2. Obtain a copy(s) of the worksheet appropriate to the calculation. There are three different worksheets and copies of each are available in the emergency cabinets in the Control Room and TSC/EOF.

   2.1 Attachment 3 For use with RM-VS107/GW108
   2.2 Attachment 4 For use with RM-VS112/GW110 (LR)
   2.3 Attachment 5 For use with RM-VS112/GW110 (HR)
   2.4 Attachment 6 for use with RM-MS-100 ABC, RM-MS-101, RASMOS.

3. If not already done, enter the distance at which the whole body and thyroid doses are to be calculated in the spaces provided on the worksheet.

4. Record the actual count rate on the indicated monitor in block a on the worksheet.

5. Record the actual release flow rate (cfm) as indicated on the specified instrument in block b.

6. Transfer the X/Q value applicable to the present meteorological conditions and the dose point of interest from the X/Q worksheet (Attachment 1). Record this value in block e.

7. From the table on the worksheet, enter the appropriate monitor cpm to release rate conversion factor in block c.

8. Multiply the observed monitor reading (block. a) by the release flow rate (block b). Multiply the result by the conversion factor (block c), and record the release rate in block d.

9. From the table on the worksheet, enter the applicable dose conversion factors in the appropriate block f -- the upper value for whole body, the bottom value for the child thyroid.

10. Multiply the calculated release rate (block. d) by the observed X/Q (block. e). Multiply this result by the whole body dose factor (block f top) and record the dose rate in block g (top).

11. Multiply the block (d) x (e) value by the child thyroid dose factor (block f lower) and record the result in block h (lower).

12. Determine, or project, the duration of the release at the current release rate. Record this value on the worksheet in block h. If a reasonable estimate of the duration is unknown, use one hour for the initial projection, and update the projection appropriately as better data becomes available.

13. Multiply the individual dose rate(s) (block g) by the release duration (block h), and record the projected dose(s) in block i.

14. If the dose commitments for other downwind distances are desired for the same instrument readings, repeat steps 6 through 13, using the spare blocks, for each additional distance desired. If the instrument readings change, obtain a new worksheet, and rework the solution completely.

Duquesne Light

FOR RM-MS-100 A,B,C
RM-MS-101
RASMOS

RELEASE RATE

a		b		c		d	
	−	15	X		=		Release* Rate Ci/sec
Monitor CPM		Background, CPM					

Conversion Factors
SGADV ONLY = 8.13 E-2
MSSV ONLY = 2.84
SGADV + MSSV = 1.97
SGADV + 2 MSSV = 3.91
2 MSSV = 5.68
AFTEX = 3.94E-1

DOSE CALCULATION

	d		e		f		g		h		i
Distance (miles)	Release Rate (Ci/sec)		X/Q** (sec/m³)		Dose Factor Whole Body / Child Thyr.		Dose Rate (R/hr)		Proj. Time (hrs)		Dose (rem)
Site Boundary EAB		X		X	262	=		X		=	
				X	694	=		X		=	
2.0		X		X	262	=		X		=	
				X	694	=		X		=	
5.0		X		X	262	=		X		=	
				X	694	=		X		=	
10.0		X		X	262	=		X		=	
				X	694	=		X		=	
Other ____		X		X	262	=		X		=	
				X	694	=		X		=	

* FROM RASMOS IF AVAILABLE AND IF MS-100A,B,C AND MS-101 ARE READING IN EXCESS OF 15 CPM AND IF THERE IS OTHER INDICATION OF A SIGNIFICANT PRIMARY-SECONDARY LEAK.

NOTE: DO NOT USE THIS METHOD IF THE RELIEF VALVE IS VENTING BOTH STEAM AND WATER.

**From Attachment 1

Date: ____________ Time: ____________ am/pm Name: ____________

INSTRUCTIONS

1. Classify the type of accident which has occurred from the accidents identified on the next page. If no accident classification can be made, choose the fuel handling accident.

2. Obtain a copy(s) of the worksheet appropriate to the calculation. There are three different worksheets and copies of each are available in the emergency cabinets in the Control Room and TSC/EOF.

   2.1 Attachment 3 For use with RM-VS107/GW108
   2.2 Attachment 4 For use with RM-VS112/GW110 (LR)
   2.3 Attachment 5 For use with RM-VS112/GW110 (HR)
   2.4 Attachment 6 for use with RM-MS-100 ABC, RM-MS-101, RASMOS.

3. If not already done, enter the distance at which the whole body and thyroid doses are to be calculated in the spaces provided on the worksheet.

4. Record the actual count rate on the indicated monitor in block a on the worksheet.

5. Record the actual release flow rate (cfm) as indicated on the specified instrument in block b.

6. Transfer the X/Q value applicable to the present meteorological conditions and the dose point of interest from the X/Q worksheet (Attachment 1). Record this value in block e.

7. From the table on the worksheet, enter the appropriate monitor cpm to release rate conversion factor in block c.

8. Multiply the observed monitor reading (block. a) by the release flow rate (block b). Multiply the result by the conversion factor (block c), and record the release rate in block d.

9. From the table on the worksheet, enter the applicable dose conversion factors in the appropriate block f -- the upper value for whole body, the bottom value for the child thyroid.

10. Multiply the calculated release rate (block. d) by the observed X/Q (block. e). Multiply this result by the whole body dose factor (block f top) and record the dose rate in block g (top).

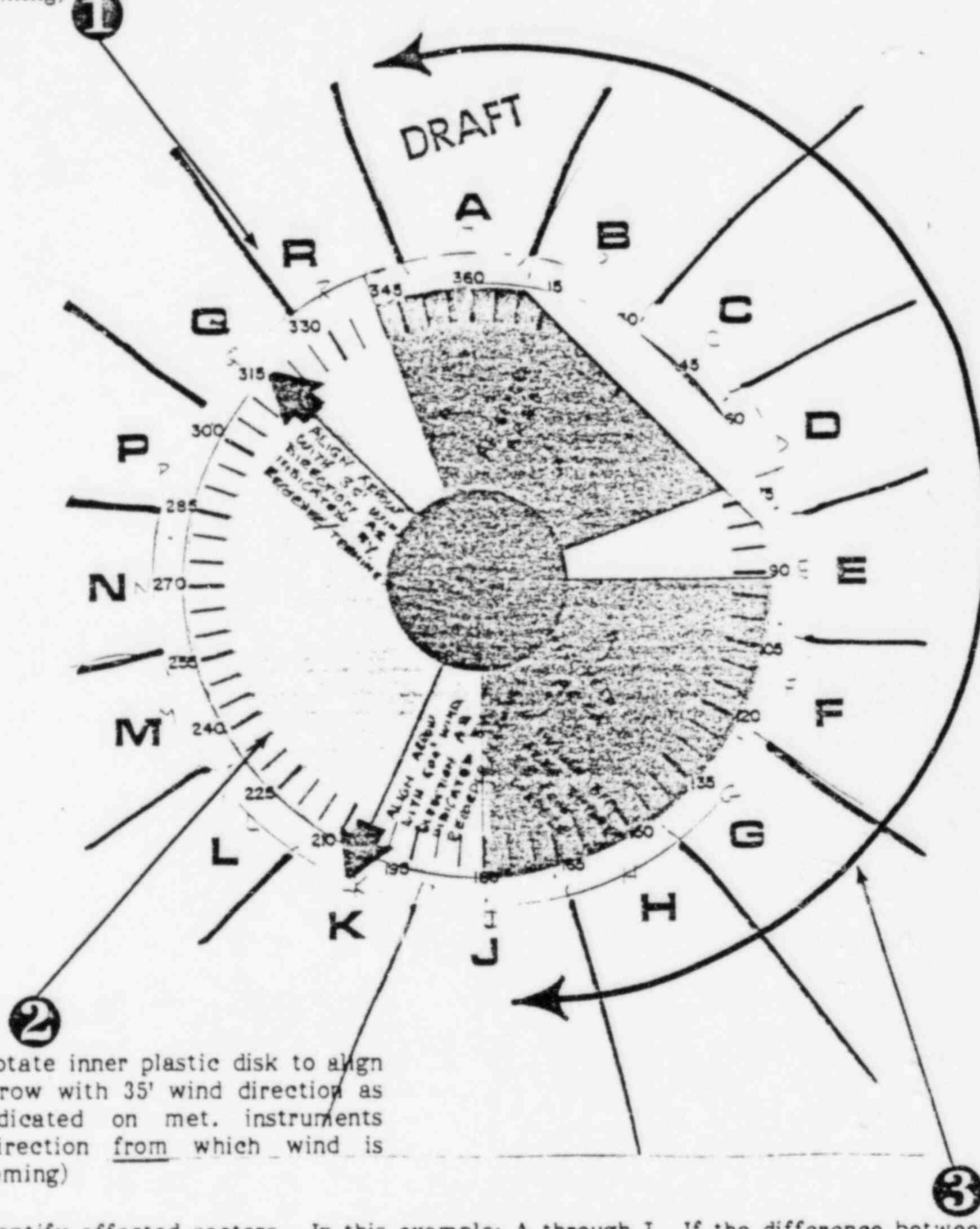
11. Multiply the block (d) x (e) value by the child thyroid dose factor (block f lower) and record the result in block h (lower).

12. Determine, or project, the duration of the release at the current release rate. Record this value on the worksheet in block h. If a reasonable estimate of the duration is unknown, use one hour for the initial projection, and update the projection appropriately as better data becomes available.

13. Multiply the individual dose rate(s) (block g) by the release duration (block h), and record the projected dose(s) in block i.

14. If the dose commitments for other downwind distances are desired for the same instrument readings, repeat steps 6 through 13, using the spare blocks, for each additional distance desired. If the instrument readings change, obtain a new worksheet, and rework the solution completely.

Rotate outer plastic disk to align arrow with 500' wind direction as indicated on met. instruments. (Direction from which wind is coming)



Rotate inner plastic disk to align arrow with 35' wind direction as indicated on met. instruments (direction from which wind is coming)

Identify affected sectors. In this example: A through J. If the difference between the 35' and 500' wind directions exceeds 180°, all sectors should be included in the recommendation. If the outer edge of the wedge bisects a sector, include the entire sector in the recommendation.

4 Always include 2 mile circle surrounding the station.

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DOSE PROJECTION USING RADOSE CODE

TRS-80 - COMPUTER PROGRAM

A. OBJECTIVE

This proceedure provides guidance and instructions to TSC Personnel for estimating offsite doses resulting from a monitored airborne release, or an accident for which no specific release data is readily available, by the use of the RADOSE TRS-80 computer code. This code mechanizes the methodology of EPP/IP 2.6.1.

This procedure is used in conjunction with EPP/IP 2.6.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan, and;
2. A release of radioactive material in excess of environmental technical specifications has occurred or is expected to have occurred, and;
3. The following meteorological parameters must be known:
   - 3.1 Wind speed (mph) at 35' (analog recorder SDR-MT-600 or Terminet)
   - 3.2 Wind Direction at 35' (analog recorder SDR-MT-600 or Terminet)
   - 3.3 Delta-T (ΔT) for 150'-35' (analog recorder XR-MT-201 (black trace) or Terminet)
   - 3.4 Wind Direction at 500' (analog recorder SDR-MT-202 or Terminet)
4. The release parameters, as measured on gaseous effluent monitors, and/or the accident classification must be known.

If prerequisites 3 and/or 4 cannot be met, alternate methods provided in EPP/IP-2.6 must be used.

5. TRS-80 Computer and RADOSE code disks

C. PRECAUTIONS

1. The wind direction as indicated on the analog recorders and the Terminet, or as used in reporting meteorological data between the station and offsite agencies is the wind direction <u>from which the wind is coming</u>. It is <u>NOT</u> the direction to which the plume is headed. Add 180° to the observed wind direction to determine the initial plume travel direction.

D. GUIDANCE AND CRITERIA

See EPP/IP - 2.6.

E. PROCEDURE

1. General Method

1.1 If not already in place, insert "RADOSE" diskette into disk drive. Position the disk such that the notch in envelope is on the left side and label is top front. Use the lower drive unit.

1.2 Turn on line printer. Position printer switch to "on line."

1.3 Turn on computer. Computer will start up and load program.

NOTE In this procedure the following symbols are used. The notation <xxxx> indicates that every character within the brackets needs to be entered.

The notation $\boxed{\text{xxxx}}$ indicates a specific key of the keyboard.

1.4 The computer will prompt an entry. When this occurs the cursor (■) or question mark (?) will flash signifying that an entry is necessary.

1.5 Key in the appropriate entry one key at a time, until all the characters for that entry are entered. In "RADOSE," an entry must not include a space or any punctuation other than a decimal point or hyphen (negative number).

1.6 If an entry error is made proceed to 2.1.

1.7 When all of the characters are correct, press $\boxed{\text{ENTER}}$ to make the entry.

1.8 If at any time during a code run, it is necessary to stop the print-out, press $\boxed{\text{BREAK}}$. Once $\boxed{\text{BREAK}}$ is pressed the code will stop with all parameters intact. At this point two options are available.

1.8.1 To restart the print-out, type <CONTINUE> and $\boxed{\text{ENTER}}$.

1.8.2 To modify input data, type <RUN> and $\boxed{\text{ENTER}}$.

1.9 If the computer appears to lock-up, or indicates "ERROR" on the CRT, press [BREAK]. The computer should respond with "Break in line xxx." If this does not occur shut off the computer. Wait at least 15 seconds and restart computer. If the error persists, the software or the computer are inoperative. Refer to EPP/IP 2.6.1.

2. Error Correction

2.1 If an error is made before pressing the [ENTER] key, use backspace cursor key [←] to eliminate error. Type in correct entry and press the [ENTER] key.

2.2 If an error is made after pressing the [ENTER] key, press the break key [BREAK]. If computer does not respond to the [BREAK] key, turn off the computer and repeat step 1.3. Do not press orange reset key without turning off computer, since reset zeroes the clock.

3. Instructions for Use of "RADOSE" Code

3.1 The step by step instructions of the RADOSE code is attachment 1 of this procedure.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures

2. TRS-80 Model III Disk System Owners Manual

G. ATTACHMENTS

1. Instruction for Use of "RADOSE" Code.

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INSTRUCTIONS FOR RADOSE CODE ENTRIES

<u>NOTE</u> An "#" indicates the entry of a single digit or character as noted below:

STEP	SCREEN DISPLAY	ENTER	REMARKS
1.	Enter Date {MM/DD/YY}?	##/##/## ENTER	"##" = 01, 02, 11, etc
2.	Enter Time {HH:MM:SS}?	##:##:## ENTER	"##" = 01, 02, 12, 17, etc *Enter hours in 24-hour time*
3.	OPTIONS 1 = ENTER DATA 2 = RUN CALCULATION 3 = END CHOICE=?	# ENTER	*1 = To enter data and run Radose code* *2 = To repeat computer run on previous data* *3 = To end Radose code--computer available for other work.*
4.	DATE/TIME= CALCULATION MODE ENTER <1> TO PERFORM TAB 6 CALC ENTER <2> TO PERFORM TAB 7 CALC MODE=?	# ENTER	*Based on known parameters about the incident and the availability of data* *1 = an unmonitored release. Dose commitment based on* FSAR *2 = Dose commitment based on monitor indications*
5.	ACCIDENT TYPE 1 GST 2 VCT 3 S/G 4 LOCA 5 MSL 6 FHA CHOICE=?	# ENTER	"#" = 1,2,3...6 *If accident cannot be classified, use # = 6 for fuel handling accident*
6.	WIND SPEED {MPH}= ?	## ENTER	"##" = value of windspeed in miles per hour. (*Any valid, positive number, including decimals is acceptable.*)
7.	STABILITY CLASSES 1 = ABC 2 = D 3 = E 4 = FG 5 = DELTA-T	# ENTER	"#" = 1,2,3,4, or 5 *If #=1 to 4, go to step 8* *If #=5 go to next step*

INSTRUCTIONS FOR RADOSE CODE ENTRIES (CON'T)

STEP	SCREEN DISPLAY	ENTER	REMARKS
7a	150-35 DELTA-T {F}=?	##, ##.#, etc ENTER	"#" = value of delta-T in degrees F. *Enter negative sign, if applicable.*
8.	35' WIND DIRECTION=?	### or ## or #	"#" = digit
9.	500' WIND DIRECTION=?	ENTER	*For display only--not used in code.*
10.	DISTANCE CHOICE = EAB, ALL, OR "X" ...WHERE X=MILES {.5<X<=10} DISTANCE CHOICE=?	<EAB> *or* <ALL> *or* # *and* ENTER	"#" = any distance, in miles between .5 and 10 "EAB" = *Site boundary* *"ALL" = EAB, .5, 1, 1.5, 2, 2.5, 3, 4, 5, 7.5, 10*
NOTE: *At this point the code will branch depending on the input data up to this time. Proceed with Step 12 if Tab 7 other than S/G Tube Rupture. If S/G Tube Rupture (Monitored), proceed to step 17.*			
11. TAB 6	TAB 6 *(Data will print-out and system will return to Step 3.)*		
12. TAB 7	MONITOR MARK NUMBER 1 = RM-VS-107/GW-108 2 = RM-VS-112/GW-110 LR 3 = RM-VS-112/GW-110 LR	# ENTER	"#" = digit *Effluent monitor with onscale reading*
13.	CPM=?	###### ENTER	"#" = Digit (*Scientific notation (#.##E##) acceptable.*)
14.	CFM=?	##### ENTER	"#" = Digit (*Scientific notation (#.##E##) acceptable*) Flow rate in cubic feet/minute
15.	PROJECTED RELEASE TIME {HOURS}=?	# ENTER	"#" = Digits or digit
16.	TAB 7 *(Data will print-out and system will return to Step 3.)*		

INSTRUCTIONS FOR RADOSE CODE ENTRIES (CON'T)

STEP	SCREEN DISPLAY	ENTER	REMARKS
17. TAB 7 S/G	S/G RELEASE PATH 1 SGADV 2 MSSV 3 SGADV & MSSV 4 SGADV & 2-MSSV 5 2-MSSV 6 AFTEX 7 RASMOS CHOICE = ?	# ENTER	"#" = Digit *SGADV=S/G Atmospheric Dump Valve* *MSSV =Main Steam Safety Vlvs* *AFTEX= Aux FW Pump Turbine Exhaust* *RASMOS= use this if RASMOS is providing a valid µCi/second value* *If # = 1-6 go to step 18* *If # = 7 go to step 17a*
17a	RASMOS, UCI/SEC = ?	# ENTER	"#" = intergers, decimals, or scientific notation
17b	*Proceed to Step 19*		
18.	NCPM = ?	# ENTER	"#" = intergers, decimals, or scientific notation for net counts per minute
19.	PROJECTED RELEASE TIME {HOURS} =?	# ENTER	"#" = intergers, decimals
20.	TAB 7 *(Data will print-out and system will return to Step 3.)*		

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LIQUID RELEASE ESTIMATE

A. OBJECTIVE

This procedure provides three methods for determining the activity in the release, or in the Ohio River following an unplanned or uncontrolled release of radioactive materials via a monitored or unmonitored pathway, or following an effluent monitor Hi-Hi alarm. The Environmental Assessment and Dose Projection Coordinator is responsible to ensure that the actions outlined in this procedure are implemented when necessary.

B. PREREQUISITES/INITIAL CONDITIONS

1. A release of radioactive materials in excess of technical specifications to the Ohio River has occurred, is imminent, or is suspected.

C. PRECAUTIONS

1. The estimation methods in this procedure are based on a uniform distribution of the released activity within the river water. The actual activity at the Midland Water Treatment Plant may vary as a function of mixing. Mixing is projected to be complete at the East Liverpool Water Treatment Plant intake.

D. PROCEDURE

1. Method 1, Activity in the BVPS Discharge

   This method determines the activity in the release prior to dilution by the Ohio River, and compares the result to the appropriate MPC (10 CFR 20) limits. This activity is the basis for the release MPCs and is the basis of the Unusual Event emergency action level. Using Attachment 1, determine the activity in the release as follows:

   1.1 Determine the discharge flow rate from FR-1LW-104-1/2 or FR-1LW-100 (for RM-1LW-116) as applicable.

   FR-1LW-104-1 or 2 ____________gpm. FR-1LW-100 ____________ gpm.

   1.2 Determine the cooling tower blowdown flow rate.

   ____________ gpm.

1.3 Detemine the dilution factor for this release as follows:

$$\frac{\text{(Discharge Flow Rate, gpm)}}{\text{(Cooling Tower Blowdown, gpm)}}$$

$$\frac{(\qquad\qquad \text{gpm})}{(\qquad\qquad \text{gpm})} = \underline{\qquad\qquad\qquad}$$

1.4 Enter the dilution factor and the sample radionuclide activaties in the appropriate blocks in Column 3 and Column 2.

1.5 For each radionuclide identified in the sample analysis, multiply the activity by the dilution factor to determine the diluted activity. Enter these values in Column 4.

1.6 Sum the diluted activities of the individual radionuclides and enter the total in the appropriate block. This is the gross activity.

1.7 Divide the diluted activity by the appropriate MPC value (Column 5) and enter the resulting "MPC Fraction" in Column 6.

1.8 Sum the individual MPC fractions and enter the result in the appropriate block.

1.9 If the sum of the MPC fraction (and/or any individual MPC fraction) exceeds 1.0, the release exceeded technical specificaiton limits. Perform emergency measures in accordance with EPP/I-2, "Unusual Event":

1.10 If the sum of the MPC fractions exceeds 35, perform step 2 of this EPP/IP.

2. Method 2. Activity in the Ohio River (Midland Water Plant Intake)

This method determines the activity in the Ohio River following dilution by the river, and compares the result to the appropriate EPA Drinking Water Standard. This activity is taken to be the activity in the drinking water at Midland and East Liverpool; and is the basis of the Alert emergency action level. Using Attachment 2, determine the activity in the release as follows:

2.1 Determine the discharge flow rate from FR-1LW-104-1 or FR-1LW-100 (for RM-1LW-116) as applicable.

FR-1LW-104-1 or 2 ______________gpm. FR-1LW-100 __________ gpm.

2.2 Determine the Ohio River flow rate, as follows:

2.2.1 Call the National Weather Service, River Forecasting Section 412-644-2888 (24-hr service) for the stage flow rating for the current stage at the Montgomery Dam on the Ohio River.

River Flow _____________ ft^3/sec

2.2.2 If the Weather Service cannot be contacted, the following approximations based on the average reported monthly river flow (ETS).

Month	ft^3/sec	Month	ft^3/sec
January	53,000	July	15,000
February	55,000	August	12,000
March	77,000	September	11,000
April	64,000	October	16,000
May	44,000	November	38,000
June	23,000	December	43,000

2.3 Determine the dilution factor for this release as follows:

$$\frac{\text{(Discharge Flow Rate, gpm)}}{\text{(River Flow, ft}^3\text{/sec)}} \quad x \quad 2.23\ E\text{-}3 \quad =$$

$$\frac{(\qquad\qquad\qquad \text{gpm})}{(\qquad\qquad \text{ft}^3\text{/sec} \quad)} \quad x \quad 2.23\ E\text{-}3 \quad = \quad \_\_\_\_\_\_\_\_\_\_$$

2.4 Enter the dilution factor and the sample radionuclide activities in the appropriate blocks in Column 3 and Column 2.

2.5 Perform Steps 1.5 through 1.8

2.6 If the sum of the MPC fractions (and/or any individual fraction) exceeds 12, the release has exceeded 12 X the EPA drinking water standards. Perform emergency measures in accordance with EPP/I-3, "Alert".

3. Method 3, Discharge Flow Rate Unknown

3.1 Determine the amount of liquid released. Use whatever means are available for this determination--decrease in tank level, etc.

Liquid Released ______________ cc OR

Liquid Released ______________ gallon x 3.79 E3 = ___________ cc.

3.2 Determine or estimate the duration of the release ____________ sec.

3.3 Determine the discharge flow (release rate) as follows:

$$\frac{(\text{Volume, cc})}{(\text{Duration, sec})} \quad X \quad 1.58\text{ E-2} \quad =$$

$$\frac{(\qquad \text{cc})}{(\qquad \text{sec})} \quad X \quad 1.58\text{ E-2} \quad = \quad \underline{\qquad\qquad} \text{ gpm.}$$

3.4 Enter this discharge flow rate in method 1 or 2 as appropriate and continue the calculation as before. If there is no dilution, consider the dilution factor to be 1.0.

E. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Emergency Implementing Procedures.
2. Title 10 CFR Parts 20 & 50.
3. USEPA 570/9-76-003 "National Interim Primary Drinking Water Standards, Appendix B"
4. "Plan for Nuclear Power Generating Station Incidents" Commonwealth of Pennsylvania Dept. of Environmental Resources/Bureau of Radiation Protection.
5. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiologicial Emergency Response Plans and Preparedness in Support of Nuclear Power Plants".

F. ATTACHMENTS

1. Unusual Event Calculation
2. Alert Calcualtion

LIQUID RELEASE DETERMINATION -- UNUSUAL EVENT

a	b	c	d	e	f
ISOTOPE	μCi/cc	Dilution Factor	Diluted μCi/cc	Discharge MPC	MPC Fraction
Cr-51				2 E-3	
Mn-54				1 E-4	
Fe-59				5 E-5	
Co-57				4 E-4	
Co-58				9 E-5	
Co-60				3 E-5	
Zn-65				1 E-4	
I-131				3 E-7	
I-133				1 E-6	
Zr-95				6 E-5	
Nb-95				1 E-4	
Mo-99				4 E-5	
Tc-99m				3 E-3	
Cs-134				9 E-6	
Cs-137				2 E-5	
Ba-140				2 E-5	
La-140				2 E-5	
Ce-141				9 E-5	
Sr-89				3 E-6	
Sr-90				3 E-7	
H-3				3 E-3	
Gross B-G				1 E-7	
				$\sum$	

1. $c = \dfrac{\text{(Discharge Flow Rate, gpm)}}{\text{(Cooling Tower Blowdown, gpm)}} = \dfrac{(\qquad \text{gpm})}{(\qquad \text{gpm})} = \_\_\_\_\_\_$

2. d = c x b
3. f = d ÷ e

NOTE

If the Sum of the MPC Fractions exceeds 1.0, the discharge exceeded Technical Specifications.
If the sum of the MPC Fractions exceeds 35, recalculate using Attachment 2 to EPP/IP-2.7.

LIQUID RELEASE DETERMINATION -- ALERT

a	b	c	d	e	f
ISOTOPE	μCi/cc	Dilution Factor	Diluted μCi/cc	EPA MPC	MPC Fraction
Cr-51				6 E-6	
Mn-54				3 E-7	
Fe-59				2 E-7	
Co-57				1 E-6	
Co-58				9 E-6	
Co-60				1 E-7	
Zn-65				3 E-7	
I-131				3 E-9	
I-133				1 E-9	
Zr-95				2 E-7	
Nb-95				3 E-7	
Mo-99				6 E-7	
Tc-99m				2 E-5	
Cs-134				2 E-5	
Cs-137				2 E-7	
Ba-140				9 E-8	
La-140				6 E-8	
Ce-141				3 E-7	
Sr-89				2 E-8	
Sr-90				8 E-9	
H-3				2 E-5	
Gross B-G				9 E-11	
				Σ	

1. $c = \frac{\text{(Discharge Flow Rate, gpm)}}{\text{(River Flow, ft}^3\text{/sec)}} = \frac{(\qquad\qquad \text{gpm})}{(\qquad\qquad \text{ft}^3\text{/sec})} \times 2.23\text{ E-3} = \_\_\_\_\_\_\_\_$

2. d = c x b
3. f = d ÷ e

NOTE

If the Sum of the MPC Fractions exceeds 12.0, the discharge potentially exceeded 12 x the EPA Primary Drinking Water Standards. This constitutes an Alert Emergency.

EVACUATION

A. OBJECTIVE

This procedure provides instructions for implementing an emergency evacuation of radiologically affected areas within the Beaver Valley Power Station and adjacent areas onsite. This procedure applies to Local, Unit, or Site evacuations. The procedure does not apply to the evacuation of members of the general public from affected areas offsite.

This procedure is supplemented by three specific emergency/evacuation plans for construction groups and for Administration Building personnel. These procedures are:

1. EPP/IP-3.1.1 "Unit 1 Construction Group Evacuation"
2. EPP/IP-3.1.2 "Unit 2 Construction Group Evacuation"
3. EPP/IP-3.1.3 "DLC Personnel outside Unit 1 Protected Area Evaluation/ Accountability"

The Emergency Director (Shift Supervisor, until relieved) has the responsibility and authority to ensure that an appropriate evacuation is implemented when radiological conditions warrant such action.

This procedure is primarily directed at evacuations initiated by actual or imminent radiological conditions. The basic actions contained in this EPP/IP also applies, where appropriate, to evacuations related to other habitability hazards, such as toxic gases or fire.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition at the Beaver Valley Power Station has resulted in radiological or toxic hazardous conditions which makes personnel evacuation to unaffected areas necessary.
2. An emergency condition at the Shippingport Atomic Power Station has resulted in the significant release of radioactivity which affects habitability and

dates an evacuation of areas within the BVPS protected area fenc, or an evacuation of the entire Beaver Valley site.

C. PRECAUTIONS

1. The implementation of evacuation must be based on the protective action which will result in the lowest personnel exposure. Evacuations should be initiated either before or after the passage of the release, and evacuation routes should be chosen to lead personnel away from the path of the plume. The Emergency Director should consider the dose rates at personnel assembly areas, dose rates onsite, dose rates along evacuation routes, and whether or not the emergency can be mitigated prior to personnel receiving significant exposures in making an evacuation decision.
2. The evacuation criteria specified for Site evacuation are based on the recommendations of the National Council on Radiation Protection (NCRP), and apply only to emergency situations in which the increases personnel exposrue is necessary to mitigate the consequences of an accident. Such exposures, although technically justifiable, are in excess of Federal radiation exposure standards and are therefore not applicable to non-emergency situations, or to most recovery operations following an emergency. Evacuations or any othe appropriate protective actions should be implemented to maintain personnel exposure as low as reasonably achievable and within normal Station radiation exposure guidelines and limits. Refer to EPP/IP-5.3 "Emergency Radiation Exposure Criteria and Control" for additional emergency exposure requirements.
3. For Site evacuations, ensure that the entire Station exclusion area is evacuated of non-essential personnel. The Station exclusion area includes areas of the Ohio River, portions of Phillis Island, and the route 168 bridge and east access road (see Attachment 1 of EPP/IP-3.5). Federal, State and County authorities are responsible for access control outside of the site boundary.

D. GUIDANCE AND CRITERIA

1. Protective Action Guides

   1.1 A local evacuation of an affected area(s) should be implemented upon occurrence of one or more of the following valid indications or conditions. Some of these indications are not observable in the Control Room, and as a result, a Local evacuation may be initiated by personnel in the affected areas and reported to the Control Room.

1.1.1 Hi-Hi alram(s) on an area radiation monitor.

1.1.2 Hi-Hi alarm(s), or an airborne indication in excess of 10 MPC on a gas or particulate monitor.

1.1.3 A building ventilation monitor(s) indicates airborne activity in excess of 1 MPC.

1.1.4 Alarm(s) on portable radiation monitors and/or continuous air monitors (CAMs).

1.1.5 Results of surveys with portable survey equipment indicate significant unexpected increases in area radiation levels.

1.1.6 Fire in any occupied area.

1.1.7 Toxic or flammable gases or heavy smoke observed or reported in any area.

1.2 Local evacuation of the Control Room should be implemented upon the decision of the Shift Supervisor. Respiratory equipment and other protective measures should be implemented as the primary protective action, with evacuation used only in the event of:

1.2.1 Uncontrollable fire in the Control Room.

1.2.2 Heavy smoke or toxic or flammable gases in the Control Room.

1.2.3 Radiological conditions which will result in 5 rem whole body, or 25 rem adult thyroid dose. Attachment 1 identifies radiation doses rates, radioiodine concentrations, and associated permissible occupancy times.

1.3 A Local evacuation of the containment should be implemented in accordance with the criteria of paragraph 1.1 above. For a containment evacuation personnel should, if possible, evacuate to the personnel air lock, close the inner door, and contact the Control Room for further instructions, before opening the outer door.

1.4 A Unit evacuation should be implemented within the times specified in Attachment 1 for each range of dose rates or radioiodine concentrations prevailaing in the affected areas. A Unit evacuation may be warranted when:

1.4.1 Multiple valid radiation monitor alarms indicate a widespread, unlocalized, problem.

1.4.2 The radiological conditions in the Primary Assembly Area or in any uncontrolled area (including area onsite but outside of Station buildings) will result in personnel exposure in excess of 5 mrem/hr or a projected dose in excess of 100 mrem whole body; and/or airborne radioactivity in excess of 1 MPC, or 40 MPC, or 40 MPC-hours/week; from uncontrolled sources of radiation. If the Primary Assembly Area is affected, an alternate assembly area should be designated, or a site evacuation should be initiated.

1.5 A Site evacuation should be implemented within the times specified in Attachment 1 for each range of dose rates or radioiodine concentrations prevailing in the affected areas. The primary difference between a Unit and Site evacuation is the size of the affected area. In addition to the criteria specified for a Unit evacuation when applied to larger areas, the following additional conditions may warrant Site evacuation:

1.5.1 Significant gound level releases have occurred or are projected.

1.5.2 Other safety hazards, such as toxic gases, fire, or flammable gases which affect large areas of the Station.

1.5.3 Adverse weather conditions, such as floods, hurricanes, or tornados, are present or are expected to occur. In the case of adverse weather, advance weather warnings will normally provide adequate time for an orderly dismissal of Station personnel, without the need for evacuation.

1.6 Offsite assembly areas are located at Kennedy's Corner Substation (with parking at the nearby Raccoon Twp Municipal Park) and at the Hookstown Substation. See Attachment 2. Unit 2 Construction personnel are directed to the Shippingport equipment laydown area.

2. Direction and Control

2.1 Emergency Originates at BVPS-1

The BVPS Emergency Director shall direct and control evacuations related to an emergency condition at BVPS-1. BVPS-2 and BVPS-1 construction group personnel will evacuate in accordance with their respective plans at the direction of the BVPS Emergency Director. The BVPS Emergency Director will make appropriate recommendations to the SAPS Shift Supervisor, who will take action as he deems appropriate in accordance with the SAPS EPP. The SAPS Shift Supervisor will coordinate his evacuation activities with the BVPS Emergency Director.

2.2 Emergency Originates at SAPS

The SAPS Emergency Control Center Supervisor shall direct and control evacuations related to an emergency condition at SAPS. If the emergency condition affects BVPS-1 and/or BVPS-2, the BVPS Emergency Director will take action in accordance with this EPP/IP, coordinating any Site evacuations with the SAPS ECC Supervisor. As before, BVPS-1 and 2 construction groups will evacuate at the direction of the BVPS Emergency Director and in accordance with their respective plans.

E. PROCEDURE

1. Local Evacuation

NOTE

A local evacuation may be initiated by personnel in the affected area in response to observed conditions, survey instrument indicaitons, or locally-alarming radiation monitors. The procedure steps below assume that the evacuation is initiated by indications/alarms observed in the Contrl Room. As a result, some steps may not be applicable to all Local evacuations.

1.1 Direct security personnel in Central (secondary) Alarm station to activate the Primary Assembly Area security badge card readers.

1.2 Sound the Evacuation Alarm using a signal of three 5-second bursts with 2-second intervals.

1.3 Announce over the page system:

"Attention, all Station personnel, there is a high radiation level (or other hazard) indicated in the <u>(specify area)</u>. Personnel in the affected are should evacuate to <u>(specify location)</u>."

Continue with additional instructions as necessary.

<u>NOTE</u>

If the containment is the affected area, instruct all personnel within the reactor containment to promptly proceed to and enter the personnel airlock. Direct these persons to close the inner airlock door, remain in the airlock, and to contact the Control Room for further instructions. When provisions have been made to control the release of airborne radioactivity from the airlock, or if the potential release is projected to be insignificant, instruct the personnel to properly exit the airlock and proceed to a safe assembly area.

1.4 Repeat the alarm and announcement four additional times at one minute intervals.

1.5 Contact the Shippingport Atomic Power Station Control Room (PAX 702/710 and report the nature and extent of the situation, if not previously done.

1.6 Notify DLC Construction Supervision onsite of the emergency situation, and request that they implement appropriate provisions of their emergency/evacuation plans and/or procedures, if necessary. If no response on the part of Unit-1 construction forces is necessary, notify DLC Construction supervision of this fact.

1.7 Implement appropriate personnel accountability measures as provided in EPP/IP-3.2 "Personnel Accountability".

1.8 If necessary, initiate search and rescue measures as provided in EPP/IP-5.1 "Search and Rescue".

1.9 Direct Radcon personnel to perform radiological surveys in the affected areas to identify the extent, nature, and if possible, the source of the problem. Direct Radcon personnel to perform radiological surveys in the assembly areas.

1.10 If the results of radiation surveys at the designated assembly areas indicate radiation levels in excess of 5 mrem/hr or a projected dose in excess of 100 mrem and/or gross airborne radioactivity (less noble gases) in excess of 1 MPC, or if continued occupancy is expected to result in excess of 40 MPC-hours/wk for isotopic mix less noble gases; relocate to another assembly area, or if necessary, initiate a Unit or Site evacuation as applicable.

1.11 On the basis of radiation surveys performed in the affected area, allow personnel to return to the area, or have Radcon personnel establish appropriate access control provisions per the Radiation Control Manual, until radiological conditions permit relaxing access controls.

2. Unit Evacuation

2.1 Direct security personnel in the Central (secondary) Alarm station to activate the Primary Assembly Area security badge card readers.

2.2 If not already done, switch to Unit 2 and the Administration Building, and sound the Evacuation Alarm using a signal of three 5-second bursts with 2-second intervals.

2.2 Announce over the page system (including Unit-2):

"Attention, all Station personnel, including construction and Administration Building personnel, a high radiation level (High Airborne Radioactivity or other hazard) exists in the ___(specify location)___. All personnel report immediately to your designated assembly area and await instructions. Personnel with emergency assignments (or identify specific personnel) report to your assigned location or specify location".

Continue with additional instructions as necessary.

2.4 Repeat the alarm and announcement four additonal times at one minute intervals.

2.5 Contact the Shippingport Atomic Power Station Control Room (PAX 702/710) and report the nature and extent of the situation, if not previously done.

2.6 Notify DLC Construction Supervision onsite of the emergency situation, and request that they implement appropriate provisions of their emergency/evacuation plans and/or procedures, if necessary.

2.7 Implement appropriate personnel accountability measures as provided in EPP/IP-3.2 "Personnel Accountability".

2.8 Personnel exiting controlled areas shall remove protective clothing and perform personal contamiantion monitoring in accordance with Radcon procedures. Radcon personnel should assist exiting personnel to facilitate the clearing of personnel from the controlled areas.

2.9 If necessary, initiate search and rescue measures as provided in EPP/IP-5.1 "Search and Rescue".

2.10 Direct Radcon personnel to perform radiological surveys in the affected areas to identify the extent, nature, and if possible, the source of the problem. Direct Radcon personnel to perform radiological surveys in the assembly areas.

NOTE

The Unit-1 and Unit-2 Construction Group and Administration Building evacuation procedures provide for dose rate and airborne sampling by assembled personnel. TSC personnel may call upon the dose rate data at the assembly areas in lieu of dispatching a Radcon technician. Since the assembly areas do not have equipment for evaluating an air sample, it will be necessary to dispatch an individual to the assembly areas to collect the air sample media and return the same to the counting room for evaluation.

2.11 If the results of radiation surveys at the designated assembly areas indicate radiation levels in excess of 5 mrem/hr or a projected dose in excess of 100 mrem or gross airborne radioactivity (less noble gases) in excess of 1 MPC, and/or if continued occupancy is expected to result in excess of 40 MPC-hours/wk for isotopic mix less noble gases; relocate to another assembly area, or if necessary initiate a Site evacuation.

2.12 On the basis of radiation surveys performed in the affected area, allow personnel to return to their normal work stations (Step 2.13), send personnel home (Step 2.14), or evacuate them to an offsite assembly area (Step 2.15).

2.13 If personnel are to be allowed to return to their normal work stations (with the exception of those areas still affected, if applicable) announce three times:

"Attention, all Station personnel, including construction, all personnel may return to their normal work locations and resume their work."

2.14 If personnel are to be sent home, proceed as follows. Coordiante the release of Station personnel with offsite authorities if an offsite evacuation is in progress to minimize traffic congestion.

2.14.1 Direct Radcon personnel to establish a personnel monitoring station in an appropriate area with ambient radiation levels low enough to permit personnel contamination monitoring, if contamination beyond the controlled area is observed or suspected. (Personnel within the controlled area are monitored upon exit from the controlled area.)

2.14.2 If a significant airborne release (particularly a ground level release) has occurred, or if significant contamination onsite is suspected, direct Radcon personnel to establish an automobile monitoring and decontamination station at a location adjacent to the site access road, near a fire hydrant.

2.14.3 If not already done, direct security personnel in the Central (secondary) Alarm station to acitvate the Primary Assembly Area security badge card readers.

2.14.4 Announce over the page system:

"Attention, all Station personnel, including construction, all personnel, except those individuals with emergency assignments, shall proceed to the personnel monitoring station ___(Specify location)______, and then proceed to your cars and drive to the automobile survey area (Specify location)____. Once released, continue to your home*"

Provide additional instructions as necessary. (*If an offsite evacuation is underway, announce this fact, and the direct personnel to their assigned evacuation reception center -- per their local jurisdiction emergency plan).

2.14.5 Direct Radcon personnel to monitor a representative number of vehicles exiting the site, or if practicable, all vehicles. If significant contamination is found on any vehicle, it shall be decontaminated, and all subsequent vehicles monitored. The Radiological Control Coordinator will establish a contamination control limit which is As Low As Reasonably Achievable, but consistent with offsite radiological conditions.

2.15 If personnel are to be directed to an offsite assembly area, proceed as follows:

2.15.1 Establish monitoring stations as provided in Step 2.14.

2.15.2 Determine which remote assembly area is upwind of the Station.

2.15.3 Announce over the page system:

"Attention all Station personnel, including construction, all personnel, except those individuals with emergency assignments, shall proceed to the personnel monitoring station (Specify location), and then proceed to your cars and drive to the automobile survey area (Specify location) . Once released, proceed to (Hookstown/Kennedy's Corner) remote assembly area for further instructions."

3. Site Evacuation

NOTE

The conditions under which a site evacuation would be initiated might involve significant release offsite with resultant contamination of environmental surfaces offsite. Under these conditons, delaying site evacuation to monitor and/or decontaminate personnel or vehicles would be superfluous, in light of the potential for recontamination offsite. In this case, personnel should be directed to proceed directly to the upwind remote assembly area for monitoring. If both remote assembly areas are within sectors from which the population is being evacuated, the Emergency Director, in cooperation with DLC management, and State and county agencies, shall designate an assembly area at which personnel monitoring will be performed. In this event, vehicles will be monitored as provided in the emergency plans of the affected jurisdictions.

3.1 Establish appropriate radiological monitoring stations consistent with the guidelines in the above note.

3.2 Direct Security to provide appropriate personnel to direct traffic onsite and at the intersection of the site access and Rt. 168. Depending on other operations, State Police or local police will relieve the security guard directing traffic offsite.

NOTE

Security personnel directing traffic should be equipped with appropriate respirators and protective clothing (from routine-use storage locaitons) if radiological conditions warrant.

3.3 When the traffic control and radiological monitoring stations are ready, switch the alarms to Unit 2 and the Administration Building and sound the Evacuation Alarm using a signal of three 5-second bursts with 2-second intervals.

NOTE

If an immediate evacuation is necessary, do not delay evacuation for monitoring. In this case, sound the alarm as described in step 3.2 and make the second announcement listed below.

3.4 Direct security personel in the Central (secondary) Alarm station to activate the Primary Assembly Area security badge card readers.

3.5 Announce over the page system (including Unit-2 and the Administration Building):

"Attention, all Station personnel including construction, all personnel except those with emergency assignments shall evacuate the site promptly and orderly. Proced to your cars and exit the site and proceed to the automobile monitoring station (Specify location). Following monitoring proceed to the (Specify the upwind remote assembly area) and await further instructions".

OR,

"Attention, all Station personnel including construction, all personnel except those with emergency assignments shall evacuate the site immediately. Proceed in your automobile to (Specify the upwind remote assembly area X or other location) and await further instructions."

Continue with additional instructions as necessary.

3.6 Repeat the alarm and announcement four additional times at one minute intervals.

3.7 Contact the Shippingport Atomic Power Station Control Room (PAX 702/710) and report the nature and extent of the situation.

3.8 Notify DLC Construction supervision onsite of the emergency situation and request that they implement appropriate provisions of their emergency/evacuation plans and/or procedures.

3.9 Implement appropriate personnel accountability measures as provided in EPP/IP-3.2 "Personnel Accountability". When accountability is complete, direct security personnel to relocate to the designated assembly area and await further instructions (with the exception of those necessary to maintain a security posture. On-duty security personnel shall retain their radios offsite.

3.10 If necessary, initiate search and rescue measures as provided in EPP/IP-5.1, "Search and Rescue".

3.11 Designate a DLC supervisor, and if possible, a Radcon Technician and another individual to supervise all evacuated personnel.

3.12 Radcon personnel shall be directed to perform contamination monitoring at the remote assembly area or onsite as provided in Step 3.1. A representative number of vehicles should be monitored, if practical.

3.13 Once personnel accountability and monitoring is complete, the Emergency Director will direct assembled personnel to go home, return to work, to redocate to another location. To minimize traffic congestion, any movement of personnel from the remote assembly areas should be coordianted with State and local officials.

F. REFERENCES

1. Beaver Valley Power Station Emerency Preparedness Plan and Implementing Procedures
2. Beaver Valley Power Station Security Plan
3. Title 10 CFR Part 50 Appendix E
4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiologicla Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

G. ATTACHMENTS

1. Criteria for Mandatory Evacuations
2. Remote Assembly Area Map.

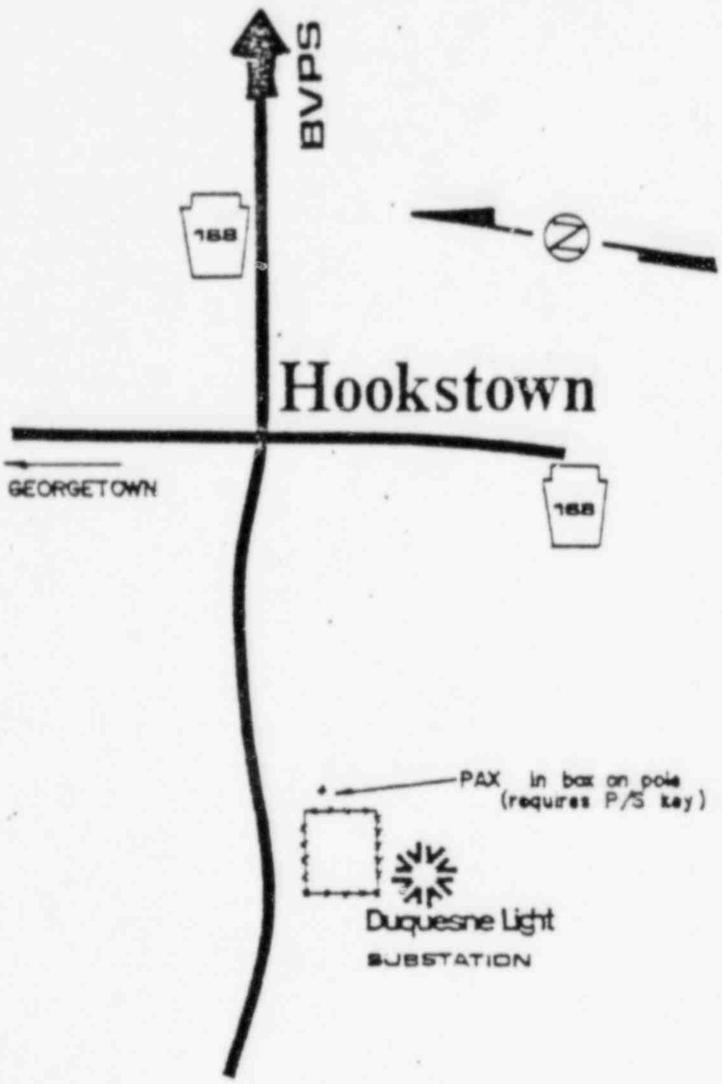
CRITERIA FOR MANDATORY EVACUATIONS[1]

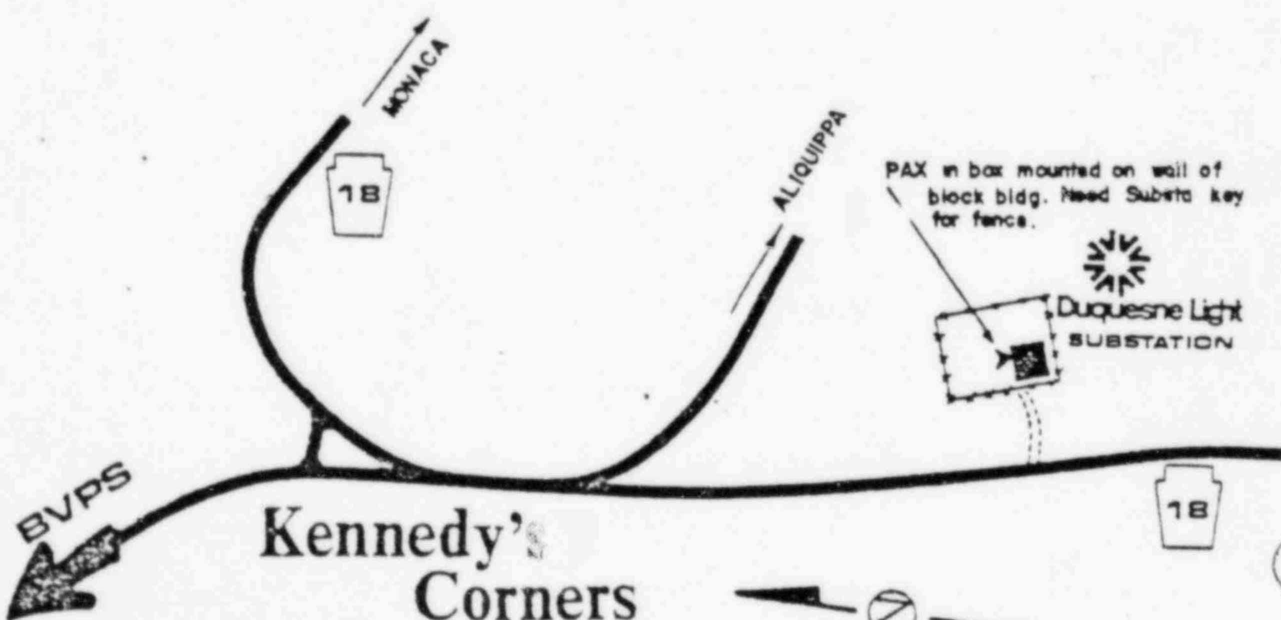
Whole Body[2] Dose Rate (mrem/hour)	Implement Evacuation Within	Radioiodine[3] Concentration (μCi/cc)
Up to 600	8 Hours	Up to 1E-5
600 to 1000	4 Hours	1E-5 to 2E-5
1000 to 2500	2 Hours	2E-5 to 4E-5
2500 to 5000	1 Hour	4E-5 to 7E-5
5000 to 10,000	30 Minutes	7E-5 to 1E-4
10,000 to 20,000	15 Minutes	1E-4 to 3E-4
20,000	IMMEDIATELY	3E-4

1. It is important to realize that there is no direct correllation between the whole body dose rates and the radioiodine concentrations; and the measurements or projections of each must be performed independently. In the event that only a direct radiation determination is available, with no corresponding knowledge of the concentration or fraction of the total which is attributable to radioiodine, the most conservative assumptions specified in the USEPA Manual for Protective Action Guides would be required. Such assumptions, based only on direct radiation determinations, would likely result in gross over-estimation of thyroid dose commitment.

2. Whole body dose to non-emergency personnel should not exceed 5000 mrem from the event. The whole body dose rates specified above are based on 5000 mrem. This value is based on the USEPA PAG Manual specified upper limit for members of the general public. Although this table specified mandatory evacuation times, in the absence of significant constraints evacuations should be implemented to maintain personnel exposure as low as reasonably achieveable and within specified quarterly exposure limits.

3. Maximum concentrations for specified time corresponds to approximately 25,000 mrem <u>adult</u> thyroid dose commitment. Radioiodine concentraiton vs <u>adult</u> thyroid dose commitment based on Appendix D, (January, 1979) to USEPA Manual of Protective Action Guides. Radioiodine nuclide distribution corresponds to 4 hours following reactor shutdown.


BVPS
168
Hookstown
GEORGETOWN
168
PAX in box on pole
(requires P/S key)
Duquesne Light
SUBSTATION


MONACA
18
ALIQUIPPA
PAX in box mounted on wall of block bldg. Need Substa key for fence.
Duquesne Light
SUBSTATION
BVPS
Kennedy's
Corners
18

UNIT 1 CONSTRUCTION GROUP EVACUATION

The attached B.V.P.S. -- E.P.P., Emergency and Evacuation Plan for Construction Personnel (Schneider, Inc.) is incorporated in the Beaver Valley Power Station Emergency Preparedness Plan as EPP/IP-3.1.1

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EMERGENCY AND EVACUATION PLAN FOR CONSTRUCTION PERSONNEL (UNIT 1)

(Schneider Power Corp. & Subcontractor Personnel)

1.0 PURPOSE AND SCOPE

1.1 This plan describes the procedure to be followed by all Schneider Power Corp./ Subconcractor personnel in the event of radiological hazard situation classed as UNUSUAL EVENT, ALERT, SITE, and GENERAL Emergencies as herin described for BVPS Unit 1. The purpose of this plan is to account for and provide adequate protection for and instruction to construction personnel until Duquesne Light Company (BVPS-Unit 1) Operating Department(s) can assess the seriousness of the incident and provide a proper course of action.

1.2 Implementation of the plan will mitigate the consequences of an emergency or accident and provide reasonable assurance that appropriate measures are being taken to protect the health and safety of the workers. This plan has been designed to coordinate and cooperate with the Beaver Valley Power Station Unit 1 Emergency Preparedness Plan (BVPS-EPP).

1.3 This plan is in recognition of the immediate need to implement emergency measures to protect or provide aid to affected personnel at BVPS-1. Provisions shall be made for an annual review of this plan and updating/ revisions be made as deemed necessary based on training, drills and changes within BVPS-1.

2.0 DEFINITIONS

2.1 CARD READER - a Computerized card-key Security System, used upon implementation of this plan to identify and print out a list of all personnel within selected areas of the station, ensuring personnel accountability.

2.2 CONTRACTOR ACCOUNTABILITY BADGE - a means of identification, supplied to construction personnel upon hire, used for accountability purposes.

2.3 CONTRACTORS ACCOUNTABILITY TRAILER - located at the west side of the Trailer City Complex, used by construction personnel to enter/exit the Trailer City Complex.

2.4 DLC ALTERNATE ACCESS BUILDING - Located at the northeast corner of the BVPS-1 security boundry, used by construction personnel to enter/exit BVPS-1.

2.5 DLC SECURITY/CARD-KEY BADGE - a means of identification supplied by the Duquesne Light Company to personnel successfully screened and permitted unescorted access within BVPS-1.

2.6 EMERGENCY ALARM SIGNAL - a 450 Hertz, 4 pulse/second signal, sounded three (3) times at five second intervals, seperated by two second pauses - repeated each minute for five (5) minutes, this signal can be readily distinguished from the stand - by alarm which is of a slower warbling sound. The Emergency Alarm Signal is tested every Friday at 12:00 noon.

2.7 PRIMARY ASSEMBLY AREA - assigned area/facility in which personnel are to report for further alert instructions.

2.8 RADIOLOGICAL HAZARD SITUATION-CLASSES : Degradation of the level of safety within BVPS-I or SAPS, requiring emergency organization response. Potential escalation might develop into the following classes as determined by the Duquesne Light Company-Operating Department(s).

2.8.1 Notification of Unusual Event - Off-normal events which do not, by themselves, constitute significant events, but some of which could indicate a potential degradation in the level of safety of the plant which might develop into an ALERT, SITE or GENERAL EMERGENCY.

2.8.2 Alert Emergency - Events which indicate an actual degradation in the level of safety of the plant.

2.8.3 Site Emergency - Events which involve actual or likely major failures of plant functions needed for protection of the public. Protective actions are likely to include evacuation of plant areas, other than control rooms and emergency stations.

2.8.4 General Emergency - Events which involve actual or imminent substantial core degradation or melting with potential for loss of containment intigrity. Pretective actions would be immediate site evacuation.

2.9 TRAILER CITY COMPLEX - temporary housing facilities located north of BVPS-I, used by construction for offices/change trailers.

2.10 VISITOR - personnel on site, within the Trailer City Complex and/or BVPS-I on a temporary basis to visit personnel or servicing construction activities.

3.0 CODES AND STANDARDS

This plan shall comply with applicable procedures, codes, guides, or standards of Duquesne Light Company and the U.S. Nuclear Regulatory Commision.

4.0 ATTACHMENTS

4.1 List of Primary Assembly Areas and Area Coordinators (Three pages)
4.2 AIR SAMPLING INSTRUCTIONS
4.3 DOSIMETER INSTRUCTIONS
4.4 OFF SITE ASSEMBLY AREAS - MAP

5.0 PREREQUISITES

5.1 Construction Security personnel will maintain accurate records of construction personnel entering/exiting the Trailer City Complex and EIC Warehouse in accordance to SPC Site Safety Program procedures SPC-SSP-82-09, 09A & 09B.

5.2 Contractors shall provide Contractor Accountability Badges along with assembly areas for their employees.

5.3 Contractor personnel shall enter/exit BVPS-1 only through the Trailer City Complex via the Contractors Accountability Trailer, unless as otherwise instructed by 5.5.

5.4 Contractor personnel entering/exiting the EIC Warehouse shall report their entrance/exit to Construction Security personnel.

5.5 When permitted, construction personnel entering/exiting BVPS-I via the DLC Main Security Building shall report their entrance/exit to the Contractors Accountability Trailer.

5.6 SPC Timekeeping personnel shall maintain a current personnel roster encompassing all personnel accountable under this plan.

6.0 TRAINING

6.1 Employees shall be trained to this plan within two (2) weeks from their starting date.

6.2 All personnel shall be trained to this plan annually.

6.3 Area Coordinators shall be trained in the operation of air sampling equipment supplied within Primary Assembly Areas. Area Coordinators are identified on Attachment 4.1.

7.0 EMERGENCY AND EVACUATION PLAN

7.1 Construction personnel shall enter/exit BVPS-1 only through the Trailer City Complex unless instructed otherwise.

7.1.1 Construction personnel shall obtain assigned Contractor Accountability Badge, affix it to the upper portion of the body while enroute through the Contractors Accountability Trailer, entering Trailer City Complex.

7.1.2 Construction personnel exiting the Trailer City Complex shall surrender their own Contractors Accountability Badge and specify destination to Construction Security personnel.

7.2 Construction personnel entering/exiting the EIC (SAPS) Warehouse shall report to Construction Security personnel.

7.3 Personnel entering the Trailer City Complex on a temporary basis shall shall be issued a Visitor Badge.

7.4 Construction personnel/visitors entering BVPS-1, through the DLC Alternate Access Building shall obtain assigned DLC Security Card Key badge, affix it to the upper portion of the body, pass through existing monitoring equipment and exit the building.

7.5 Construction personnel exiting BVPS-1 shall pause briefly at existing monitoring equipment, surrender their own DLC Security Card Key badge to DLC Security personnel and exit the building.

7.6 Construction personnel entering/exiting BVPS-1 during periods in which access through the DLC Alternate Access Building is not possible shall report their presence at the Contractors Accountability Trailer and proceed to the DLC Main Security Building. Upon exit each employee shall report to the Contractors Accountability Trailer and specify destination.

8.0 IMPLEMENTATION

8.1 Upon actuation of the Emergency Alarm Signal, construction personnel are to stop work activities and listen for instructions announced over BVPS-1 Plant Page Party System. If instructions are not given, construction personnel shall report to their respective Assembly Area.

8.2 Construction personnel should leave work areas in as safe a condition as possible.

8.2.1 Shut down construction equipment (if possible)

8.2.2 Lower suspended loads (if possible)

8.2.3 Make an effort to seal openings in clean systems

8.3 Construction personnel exiting Safety Related/Vital Areas shall utilize CARD READERS, ensuring computorized accountability is maintained.

8.4 To facilitate exit during a bonifide emergency, construction personnel may "tailgate". Each employee shall insert DLC Security Card-Key badge into CARD READER prior to exiting area to maintain personnel accountability.

8.5 In the event CARD READERS are inoperable during a bonifide emergency, construction personnel may "THUMB-OUT" by manually releasing the door lock.

8.6 To alleviate congestion within the DLC locker room, construction personnel shall, at Rad Cons discreation, exit the Primary Auxiliary Building via the locker room-north man door or by passing through the hallway at the DLC-PCA Shop.

8.7 Contractor personnel entering Safety Related/Vital Areas via temporary trailers are to exit utilizing the same trailer, choosing the shortest route possible to reach their Assembly Area.

9.0 ACCOUNTABILITY ACTIONS

9.1 Upon activation of the Emergency Alarm Signal DLC Security personnel shall commence personnel accountability in accordance to BVPS-1 EPP/IP 3.2.

9.2 Construction personnel shall surrender their own DLC Security Card-Key badge to DLC Security personnel while enroute through the DLC Alternate Access Building.

9.3 Construction Security personnel shall secure all exits of the Trailer City Complex, permitting personnel returning to Assembly Area from outside areas to pass through.

9.3.1 A review of existing badge boards shall be performed to determine accountability status.

9.3.2 Contact with the EIC Warehouse shall be performed to determine accountability status.

9.3.3 Construction personnel remaining unaccountable shall be recorded and reported to the SPC-EPP Coordinator/ alternate when contacted.

9.4 Construction personnel accountability shall be conveyed to the DLC-CDN Senior Construction Specialist/alternate. In the event contact with the above mentioned party is not possible, accountability status may be reported directly to the DLC-BVPS I Security Coordinator via the BVPS-I Plant Page Party System or the PAX Phone System (extension 144) or (643-5954).

10.0 EMERGENCY ACTIONS

10.1 Upon assemblement within assembly area, construction personnel shall take necessary precautions in an attempt to assure personal health and safety.

10.1.1 Close all doors and windows - seal all openings

10.1.2 Shut down ventilation systems

10.1.3 Refrain from eating, drinking and smoking

10.2 Area Coordinators shall commence air-sampling and monitoring of dosimetry in accordance to attachment 4.2 & 4.3 of this plan, recording necessary information.

11.0 ASSESSMENT ACTIONS

11.1 DLC-Power Station personnel will advise construction personnel of radiation levels at various locations as it might affect Primary Assembly Areas.

11.2 Directions relating to the radiological hazard/emergency situation will be conveyed to construction personnel as necessary.

11.3 Instructions in general, will be announced over the BVPS-I Plant Page Party System. These instruction may be as follows:

11.3.1 RETURN TO WORK - resume work activities. Expections may be made in areas near the source of the problem.

11.3.2 EVACUATE SITE - proceed to OFF-SITE Assembly Area, whichever is upwind of BVPS-I.

a) BVPS-II LAYDOWN AREA (east of site

b) HOOKSTOWN SUBSTATION (west of site)

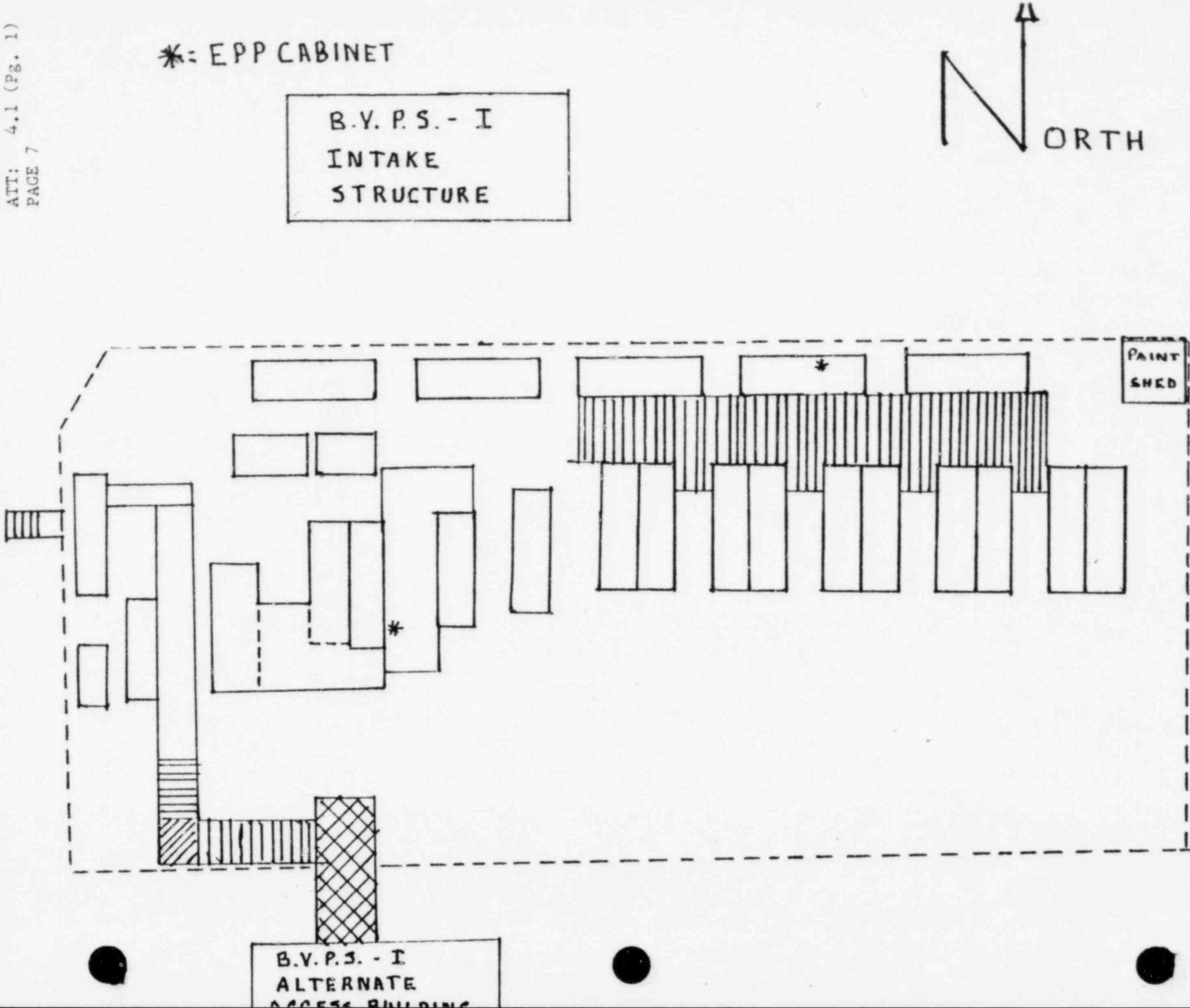
12.0 EVACUATION ACTIONS

12.1 DLC Emergency Control Center shall implement procedures for a general site evacuation, Schneider Power Corp./subcontractor personnel will be informed with regard to radiation monitoring teams provided at the main gate visitors gate and vehicle monitoring point.

12.1.1 Schneider Power Corp./subcontractor personnel shall be logged out by DLC as they are monitored.

12.2 In the event an immediate evacuation is implemented, Area Coordinator shall instruct construction personnel in respect to which OFF-SITE Assembly area to report to. OFF-SITE Assembly Area location maps (attachment 4.4) shall be passed out to construction personnel.

12.3 Construction personnel shall retain their assigned Contractors Accountability/Visitor Badge, surrendering it upon arrival at OFF-SITE Assembly Area. Construction personnel not retaining above mentioned badge shall report presence upon arrival at OFF-SITE Assembly Area.


*: EPP CABINET
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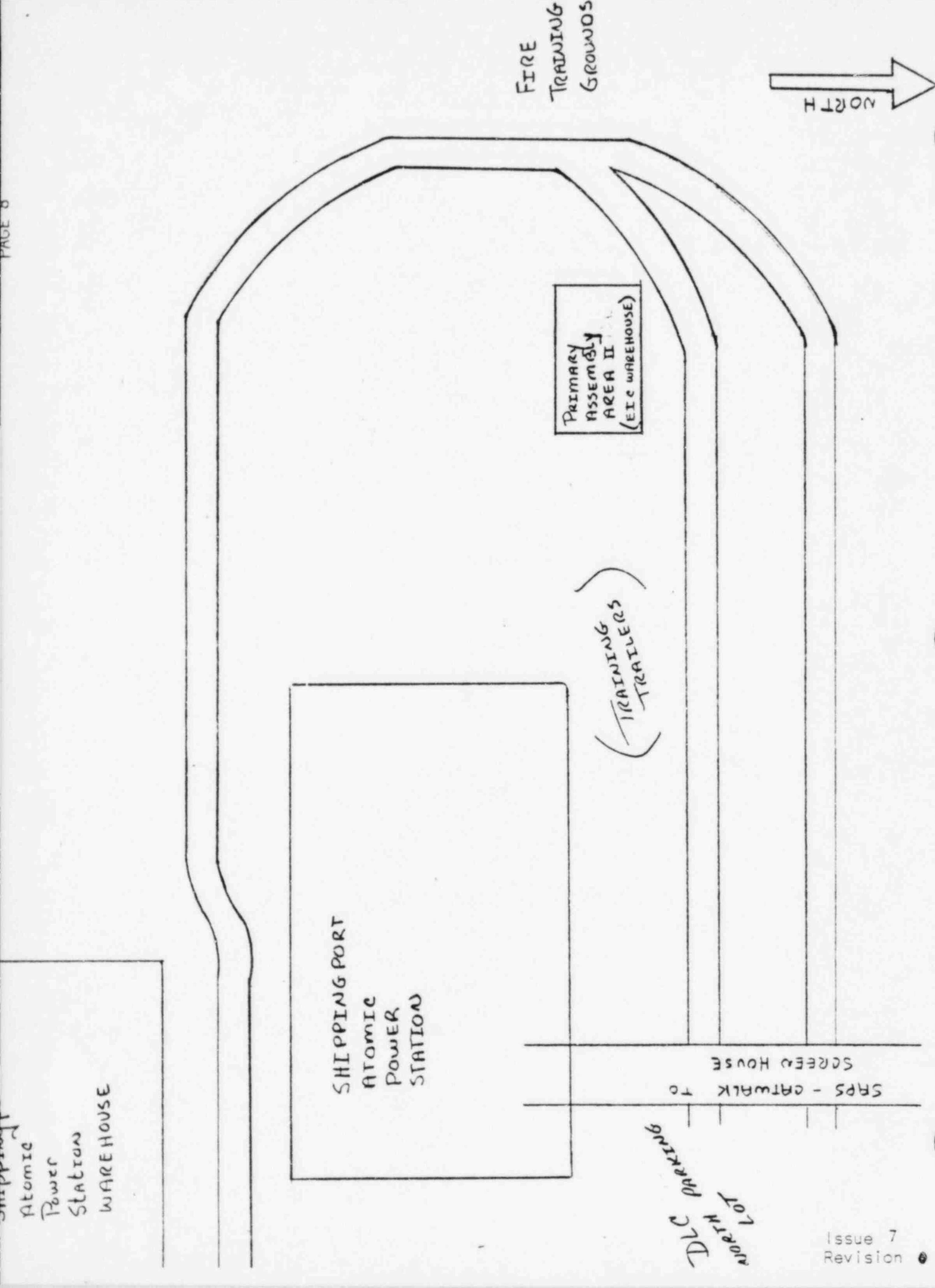
ALTERNATE


Atomic
Power
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POWER
STATION
(TRAINING TRAILERS)
PRIMARY
ASSEMBLY
AREA II
(EIC WAREHOUSE)
FIRE
TRAINING
GROUNDS
NORTH
SAPS - CATWALK TO
SCREEN HOUSE
DLC PARKING
NORTH LOT

PRIMARY ASSEMBLY AREA - AREA COORDINATOR

DAYSHIFT

PRIMARY ASSEMBLY AREA	AREA COORDINATOR
PRIMARY ASSEMBLY AREA I (TRAILER CITY COMPLEX)	Rodger Modrak Edward Hribar Jr. Alternate Sam Palombini
PRIMARY ASSEMBLY AREA II (EIC WAREHOUSE - SAPS)	D. Bradly Alternate A. Monitinia

AIR SAMPLING INSTRUCTIONS

Purpose

The Air Sampler maintained in the emergency cupboard is to be utilized by the assigned supervisory personnel for sampling for air borne radioactivity in the event of an emergency.

Procedure

1) Ensure that the Silver Zeolite Cartridge is properly in place.

   NOTE: If identified as a drill-use the filter or charcoal cartridge

2) Turn on sampler and complete the following form.

Date: ______________________ Time Started: ______________________

Area Monitored: ____

Reason For Monitoring: ____________________ By: ____________________

Air Sampler Flow Rate = ____________________CFM

35 Cu. Ft. - ________________CFM= ________________________Minutes

Operate Sampler for __________Minutes (Total)

Sampler Type____________________ Serial No:________________________

- -

Sample Calculations:

Step 3: Air Sampler Flow Rate = 5CFM

Step 4: 35Cu. Fit. - 5 CFM = 7 Minutes

Step 5: Operate Sampler for 7 Minutes (Total)

Dosimeter Instructions

PURPOSE

The dosimeters maintained in the emergency cabinet will be utilized during the performance of a radiological emergency at the site.

INSTRUCTIONS

1. Remove dosimeters from storage and read dosimeters. Note time.
2. Wait ten minutes. (Monitor dosimeter readings)
3. Read both dosimeters again.
   a. For dosimeter having a range of 0-500 MR, if either reading has advanced one scale increment (20 MR/10 min.-120 MR/hour), this indicates evacuation may be necessary. In such case, contact the DLC-CDN Senior Construction Specialist or Senior CDN Representative and inform them of your finding. The CDN Representative shall contact the BVPS Emergency Control Center (ECC).
   b. If the 120 MR/hour reading is not exceeded (one scale increment in ten minutes), repeat reading the dosimeter every ten minutes, until instructed by the ECC that the emergency no longer exists or advised by the ECC that continued dosimetry reading is no longer necessary during the emergency or the 120 MR/hour reading is exceeded and the ECC has been notified.

B.V.P.S. - E.P.P.
OFF SITE
ASSEMBLY AREA MAP

O roadblock
X impossible

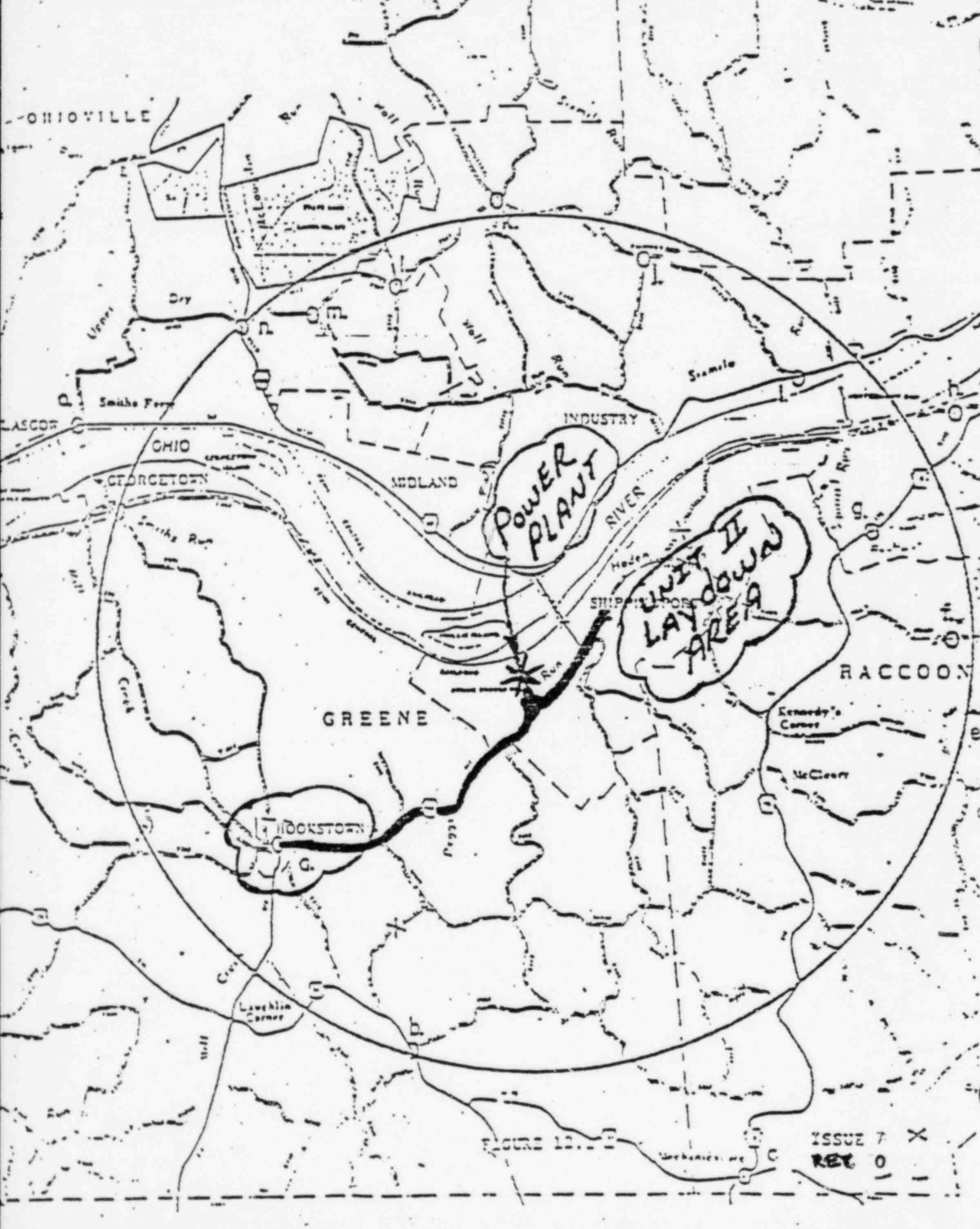

FIGURE 13.1

UNIT 2 CONSTRUCTION GROUP EVACUATION

The attached Stone and Webster Corporation Field Construction Procedure FCP-10 "Special Alert Procedure for Construction Personnel Beaver Valley Power Station-2" and attachments are incorporated in the Beaver Valley Power Station Emergency Preparedness Plan as EPP/IP-3.1.2

INTENTIONALLY BLANK

CONTROL LEVEL 1 E5820316 ΦΦΦ1

STONE & WEBSTER ENGINEERING CORPORATION

FIELD CONSTRUCTION PROCEDURE

FOR

SPECIAL ALERT PROCEDURE FOR CONSTRUCTION PERSONNEL

BEAVER VALLEY POWER STATION - 2

J.O. NO. 12241 FCP- 10 Date 7/19/78, Page 1 of 22

Prepared by D. J. Wiatrak Organization Stone & Webster

Change Number	1	2	3	4	5	6
Date	9/21/78	3/13/79	4/17/79	11/21/79	12/12/79	9/22/80
Change Number	7	8	9	10		
Date	6/2/81	7/2/81	1/5/82	3/15/82		

Overall Responsibility for Coordination Stone & Webster

APPROVED FOR USE

Organization	Signature	Date
S&WEC - Construction	C. R. B[illegible]	3/15/82
S&WEC - Engineering	[illegible]	3-15-82
S&WEC - Safety Supervisor	D J Wiatrak	3-15-82
DLC - Const. Department Nuclear	[illegible]	3/15/82
SBI - Security Bureau Inc.	[illegible]	3-15-82

NOTICE

There shall be NO deviations to the instructions contained in this procedure. Modification, deletion, addition or any other change to these instructions shall only be implemented when authorized by distribution of an approved change to the procedure.

LIST OF EFFECTIVE PAGES

FCP-10, Dated 7/19/78 Change Number 10 contains the following pages.

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1. Cover Sheet	-	10
2. List of Effective Pages	-	10
3. Table of Contents	-	10
4. Table of Contents Continued	-	10
5.	-	10
6.	-	3
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10. Through and including 13	-	10
14.	-	3
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16. Through and including 17	-	3
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20. Through and including 21	-	10
22.	-	6

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1.0 PURPOSE & SCOPE

1.1 To provide temporary protection and personnel accountability for Jobsite occupants in the un-likely event of an uncontrolled release of radio-active materials from the Shippingport Atomic Power Station or the Beaver Valley Power Station Unit 1.

1.2 This procedure shall encompass all Site occupants.

CN-10-10 1.3 Activities required per this procedure shall occur simultaneously, and all personnel shall initiate the required activities immediately upon hearing the alarm and appropriate verbal instructions.

2.0 REFERENCES

None

3.0 ATTACHMENTS

3.1 Area Co-Ordinators Report Form

3.2 Site Occupants Exit Log Form

3.3 Visitor, Service, New Hire and Temporary Badge Log Form

3.4 Badge Board Status Report Form

3.5 List of Assembly Areas and Area Co-Ordinators

3.6 List of Personnel Accounting Team Members

3.7 Special Alert Telephone List

4.0 GENERAL

4.1 Definitions

4.1.1 Site Occupants - Jobsite assigned construction personnel, security guards, visitors, vendors, etc.

4.1.2 Assigned Personnel - Jobsite construction personnel of Stone & Webster, Duquesne Light, or Site Contractors who are assigned an Identification Badge and are within the Project Accountability Program.

4.1.3 Non-Employees - Jobsite occupants entering with a Visitors Badge, Temporary Identification Badge or Picture Badge issued for convenience reasons for purposes of visiting Jobsite personnel, or servicing construction activities.

4.1.4 Assembly Areas - Those areas assigned as locations for occupants to report to for further Alert instructions. All occupants are assigned an Assembly Area. (See Attachment 3.5).

4.1.5 Offsite Assembly Areas - Assembly Areas located Offsite for occupants to report to in the event of direction by the Area Co-Ordinator to evacuate the Jobsite.

4.1.6 Area Co-Ordinator - Individual assigned duties to be accomplished within their assigned Assembly Area during an Alert. (See Attachment 3.5).

4.1.7 Personnel Accounting Team - Individuals assigned the responsibility of accountability of Site occupants during an Alert. (See Attachment 3.6).

4.1.8 Return To Work - Area Co-Ordinators may instruct personnel to return to work to their specified work areas. Exceptions may be made concerning certain work areas due to a localized problem.

4.1.9 General Site Evacuation - Area Co-Ordinators may instruct personnel to evacuate Jobsite, after personnel and vehicles are monitored, and to go home.

4.1.10 Immediate Site Evacuation - Area Co-Ordinators may instruct personnel to evacuate Jobsite and report to Offsite Assembly Areas.

4.2 Prerequisites

4.2.1 Site Security Guards will maintain accurate records of Jobsite occupants entering or exiting Jobsite.

4.2.2 Special Alert Cabinets, painted Safety Green and marked "SPECIAL ALERT EQUIPMENT - DO NOT USE FOR OTHER PURPOSES", shall be located in each Assembly Area equipped with the following:

a. One Folding Stretcher

b. One Blanket

c. One First Aid Kit

d. One Air Sampler with Instructions

e. Three rolls of Tuck Tape

f. Supply of Area Co-Ordinators Report Form

g. Supply of Area Maps Locating Offsite Assembly Areas

CN-10-3 h. Armband Identification for Assembly Area Co-Ordinators

CN-10-3 i. Building Sketches of HVAC Controls

CN-10-3 j. Keys for HVAC Controls (where applicapable)

4.2.3 Each Assembly Area location shall be clearly marked with signs visible from all general directions and from at least 100 ft.

4.3 Training

4.3.1 Site Contractors shall train their construction personnel to the requirements of this procedure.

4.3.2 Newly hired personnel shall be trained within two (2) weeks.

CN-10-4 4.3.3 Reviews of this procedure shall be performed annually for all personnel.

5.0 SPECIAL ALERT SIGNALS & INSTRUCTIONS

5.1 Evacuation Alarm Signal

5.1.1 The Beaver Valley Power Station Unit 1 Evacuation Alarm Signal is NOT instruction to evacuate the Jobsite. It is an attention/warning signal for the purpose of alerting Jobsite occupants to listen for further verbal instructions.

5.1.2 The Evacuation Alarm Signal is sounded for both evacuation of local areas within Unit 1 and possible evacuation of Unit 2 Jobsite.

NOTE: Unit 2 Jobsite occupants will not always be affected by the signal.

5.1.3 If required, Unit 1 Emergency Control Center will give specific verbal instructions to Unit 2 Jobsite occupants to report to their assigned Assembly Areas.

5.1.4 The Evacuation Alarm Signal is connected to and will automatically broadcast on Unit 2 Gai-Tronics Page Party System.

5.1.5 The Evacuation Alarm Signal is a 450 Hz, 4-pulse-per-second signal which will be sounded three (3) times, at five (5) second intervals, separated by two (2) second pauses, and is repeated each minute for five (5) minutes. This signal can be readily distinguished from the Stand-By Alarm which is a slower warbling sound.

NOTE: The Evacuation Alarm Signal will be tested at approximately 12:05 p.m. each Friday. The test signal is two (2) separate five second soundings of the signal.

5.1.6 The Evacuation Alarm Signal and subsequent verbal instructions will be repeated several times to assure that Jobsite occupants have the opportunity to hear it.

5.2 Special Alert Instructions

5.2.1 Following the Evacuation Alarm Signal, the Unit 1 Emergency Control Center may verbally instruct Unit 2 Jobsite occupants that the Signal does not affect them (which means that they are to continue working) or, that they shall report to their assigned Assembly Areas.

5.2.2 Personnel working within the Unit 1 perimeter at the time of an Alert shall follow Unit 1 procedure which requires personnel to report to the Unit 1 Primary Assembly Area (men's locker room) unless instructions are given otherwise.

5.2.3 Further instructions to Unit 2 Jobsite occupants (if instructed to report to Assembly Areas) will be through the Area Co-Ordinators from the Duquesne Light Superintendent of Nuclear Construction/designee.

6.0 JOBSITE ACTIVITY FOLLOWING AN ALERT SIGNAL

6.1 Personnel Direction

6.1.1 When the Unit 1 Emergency Control Center gives verbal instructions to the Unit 2 Jobsite occupants to report to their assigned Assembly Areas, Jobsite personnel shall:

a. Immediately STOP work.

b. Shut down construction equipment.

c. Lower suspended loads (if possible).

d. Seal openings in clean systems (if possible).

e. Attempt to leave construction areas in safe condition.

CN-10-3 f. Report to their assigned Assembly Area as soon as possible, and report to their immediate supervisor.

NOTE: If personnel are not able to report to their assigned Assembly Area within 15 minutes after the Alert Signal has sounded, they shall report to the nearest Assembly Area.

g. Escort non-employees to escort's assigned (or nearest) Assembly Area.

6.2 Area Co-Ordinators

6.2.1 As soon as possible after arriving at Assembly Area, the Area Co-Ordinator shall:

a. Start Air Sampler. Air sampler will be checked for air flow at least every 15 minutes.

b. Close all windows, doors, and other openings. Tape open cracks if necessary.

c. Turn off fans and other air moving equipment which draws in outside air. Building sketches showing location of HVAC controls are provided in the Special Alert Equipment Cabinets. Where controls are normally kept locked, keys to the locking mechanism are also provided in the cabinets.

d. Begin accounting for personnel. Fill out Area Co-Ordinators Report Form and call it in to the Personnel Accounting Team located in the Time Office.

6.3 Main Gate & Visitors Gate Security Guards

6.3.1 Lock vehicle/personnel gates to restrict entry/exit.

6.3.2 Direct incoming vehicles, visitors/vendors, not related to the Alert off the site until the alert has ended.

6.3.3 Assign Roving Security Patrol to clear personnel/vehicles from outside perimeter fence.

a. Direct pedestrian employees to their assigned Assembly Area.

b. Direct employees in vehicles to Laydown Area 1.

c. Direct non-employees offsite.

d. Caution vehicle drivers to close windows and stay inside vehicles.

CN-10-6 6.3.4 Prepare a Badge Board Status Report; a Site Occupants Exit Log; and a Visitor, Service, New Hire and Temporary Badge Log and report to the Personnel Accounting Team which is located in the Time Office by phone extensions 182, 183, 221 or 222 or by Gai-Tronics.

NOTE: Security Guards shall follow instructions contained in the Security Guards Procedure Manual.

6.3.5 Except as noted in Paragraph 6.3.3.a, Security Guards shall restrict entry/exit by personnel/vehicles, not related to the Alert, until instructed by the Stone & Webster Resident Manager to evacuate the Jobsite. These orders will be given by the Security Guard Captain.

6.3.6 Main Gate and Visitors Gate Guards shall remain at their Posts/Gates until directed otherwise by the Security Guard Captain.

6.4 Security Guard Posts/Gates

6.4.1 Security Guards stationed at other Posts/Gates (other than Main Gate & Visitors Gate) shall follow instructions contained in the Security Guards Procedure Manual, or as directed by the Security Guard Captain.

6.5 Personnel Accounting Team

6.5.1 The Personnel Accounting Team shall set-up accountability operations in the Stone & Webster Time Office which is serviced by phone extensions 182, 183, 221 and 222.

6.5.2 The Personnel Accounting Team will begin preparation to receive the following reports:

a. Area Co-Ordinators Report

b. Site Occupants Exit Log

c. Visitor, Service, New Hire and Temporary Badge Log

d. Badge Board Status Report

6.5.3 The Personnel Accounting Team will await reports from Area Co-Ordinators, and the Main Gate & Visitors Gate Security Guards.

6.6 Stone & Webster Resident Manager

CN-10-10 6.6.1 The Stone & Webster Resident Manager/designee will report to the office of the DLC Superintendent of Nuclear Construction immediately after the alarm is sounded with verbal instructions for Unit 2. He can then be reached at extension 364.

7.0 PERSONNEL ACCOUNTABILITY

7.1 All Jobsite occupants must be accounted for, at the time of an Alert, through the Personnel Accountability Program.

7.2 As occupants report to their assigned Assembly Area, they shall check-in with their Supervisor, Department Head, Crew Foreman, etc., and also check-in any visitors/vendors which they may have escorted to the Assembly Area.

7.3 Each contractor/company will be responsible for the following:

a. Accounting for their personnel and reporting to the Area Co-Ordinator, by name and badge number, any persons missing from their assigned Assembly Area. Missing persons will mean any person on the current Personnel Roster who is not in their assigned Assembly Area, regardless of whether or not they are absent from work that day, or where else they might be at the time.

b. Reporting to the Area Co-Ordinator any visitors who reported to the Assembly Area.

c. Assisting the Area Co-Ordinators in determining persons who reported to their Assembly Area but are assigned to another Assembly Area.

7.3.1 Area Co-Ordinators will determine from reports of contractors/companies in their area, and from a survey of personnel in their area, the three categories of persons defined on the Area Co-Ordinators Report Form. These persons will be listed as required on the report from. When complete, the Area Co-Ordinator will call the report in to the Personnel Accounting Team.

7.4 Gate Guards will report the following to the Personnel Accounting Team on extensions 182, 183, 221 or 222:

7.4.1 Guard Gates who maintain Badge Boards will make and report Badge Board Status Report.

7.4.2 Prepare and report Visitor, Service, New Hire and Temporary Badge Log by name, badge number and company represented.

7.4.3 Prepare and report a Site Occupants Exit Log.

7.5 The Personnel Accounting Team shall log reports as received on the Site Occupants Exit Log; the Visitor, Service, New Hire and Temporary Badge Log; the Badge Board Status Report; and the Assembly Area Co-Ordinators Report Forms.

7.6 After reports have been received from the Area Co-Ordinators, and the Main Gate & Visitors Gate Security Guards, the Personnel Accounting Team shall compare all reports and determine if any persons are missing.

7.7 The Personnel Accounting Team Director shall notify the Stone & Webster Resident Manager at extension 364 of those persons that are determined to be MISSING.

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7.8 In the event that there are instructions given for an Immediate Site Evacuation prior to completing the Personnel Accountability, all Logs, Reports, and Records of Jobsite occupancy, shall be taken by the Area Co-Ordinators, Security Guards, and Personnel Accounting Team to the Offsite Assembly Area.

7.8.1 The Personnel Accounting Team shall set-up a Personnel Accountability Area at the Offsite Assembly Area to continue and complete the personnel accountability.

7.9 If, after personnel accounting is complete, persons are still missing, the Stone & Webster Resident Manager will notify the Duquesne Light Superintendent of Nuclear Construction of the missing persons and request permission to dispatch a search team to the field.

7.10 The Superintendent of Nuclear Construction will contact the Unit 1 Emergency Control Center to determine if contamination levels in the Unit 2 Jobsite area require monitoring/protective equipment for the search team. Monitoring/protective equipment will be supplied by Unit 1 when required.

7.11 The search team will be equipped with radios and protective equipment (if required) and be dispatched to the field to locate the missing persons.

7.12 Upon return of the missing persons and the search team, the Stone & Webster Resident Manager will notify the Superintendent of Nuclear Construction that all Jobsite occupants are accounted for.

CN-10-10 | 7.13 The Superintendent of Nuclear Construction will notify the Central Alarm Station (CAS) at DLC extension 5114 that the Unit 2 jobsite occupants have been accounted for.

8.0 <u>RETURN TO WORK - INSTRUCTIONS</u>

8.1 The Unit 1 Emergency Control Center will notify the Duquesne Light Superintendent of Nuclear Construction of the Return To Work Order and delineate any specific Unit 2 Jobsite areas which may be restricted.

8.2 Upon notification from the Superintendent of Nuclear Construction, the Stone & Webster Resident Manager shall:

8.2.1 Direct the Area Co-Ordinators to instruct personnel to return to work and notify them of any specific Unit 2 Jobsite areas which may be restricted.

8.2.2 Arrange for barricades or post a watch at the entrance of any specific Unit 2 Jobsite area which is restricted to prevent entrance.

9.0 <u>GENERAL SITE EVACUATION - INSTRUCTIONS</u>

9.1 The Unit 1 Emergency Control Center will notify the Duquesne Light Superintendent of Nuclear Construction of the General Site Evacuation Order.

9.2 Upon notification from the Superintendent of Nuclear Construction, the Stone & Webster Resident Manager shall:

9.2.1 Establish monitoring locations for personnel/vehicles if required, with concurrance of Unit 1 Monitoring Team.

9.2.2 Notify Security Guard Captain of these locations and arrange for personnel/vehicle traffic control.

9.2.3 Dispatch the Radiation Monitoring Teams, as provided by the Unit 1 Operating Department to the monitoring locations.

9.2.4 Notify Security Guard Captain to direct Security Gate/Posts to allow personnel/vehicles to exit Jobsite after monitoring.

9.2.5 Notify and instruct the Area Co-Ordinators concerning the locations of the monitoring and to direct personnel to these locations for Radiation Monitoring, and to assure that personnel exit the Jobsite, after monitoring, in reasonable order.

10.0 <u>IMMEDIATE SITE EVACUATION - INSTRUCTIONS</u>

10.1 The Unit 1 Emergency Control Center will notify the Duquesne Light Superintendent of Nuclear Construction of the Immediate Site Evacuation Order, and designate the direction (up-wind) of evacuation.

10.2 Upon notification from the Superintendent of Nuclear Construction, of designated Offsite Assembly Area, the Stone & Webster Resident Manager shall:

10.2.1 Dispatch an early-arrival team to the designated Offsite Assembly Area with radios to control and direct personnel/vehicle traffic.

10.2.2 Notify the Personnel Accounting Team, the Security Guard Captain, and Area Co-Ordinators of the evacuation and instruct them to take their Personnel Accountability Records with them to the Offsite Assembly Area.

10.2.3 Notify the Area Co-Ordinators to direct personnel to evacuate to the designated Offsite Assembly Area, and to direct Supervisors to take their radios with them.

10.2.4 Instruct the Security Guard Captain to assure that Jobsite gates are locked after personnel evacuate the Jobsite, and that Security Guards report to the designated Offsite Assembly Area.

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10.2.5 When personnel are re-assembled in the designated Offsite Assembly Area, call at extension 364 the Duquesne Light Superintendent of Nuclear Construction and stand-by for further instructions.

10.3 Upon notification from the Stone & Webster Resident Manager, the Area Co-Ordinators shall:

10.3.1 Handout Area Maps locating Offsite Assembly Area and indicate to personnel the designated Offsite Assembly Area to report to.

10.3.2 Instruct personnel to report to the designated Offsite Assembly Area stressing the importance of immediately reporting for Radiation Monitoring.

10.3.3 Take Personnel Accountability Records to the designated Offsite Assembly Area.

10.3.4 Report to the designated Offsite Assembly Area and report to the Personnel Accounting Team to continue personnel accounting.

10.4 Upon notification from the Stone & Webster Resident Manager, the Personnel Accounting Team shall:

10.4.1 Take Personnel Accounting Records to the designated Offsite Assembly Area.

10.4.2 The Personnel Accounting Team Director shall organize and direct the establishment of a Personnel Accountability Center at the designated Offsite Assembly Area.

10.5 Upon notification from the Stone & Webster Resident Manager, the Security Guard Captain will direct the various Security Guard Gates/Posts to follow the Security Guard Procedure Manual for Jobsite evacuation.

11.0 COMMUNICATIONS

11.1 Only the Duquesne Light Superintendent of Nuclear Construction is authorized to be in contact with the Unit 1 Emergency Control Center for instructions regarding the Alert.

11.2 The Superintendent of Nuclear Construction will in turn notify the Stone & Webster Resident Manager of these instructions for notification and direction of Jobsite occupants concerning the Alert.

CN-10-3 11.3 Jobsite occupants are specifically instructed NOT to use the communication system at the Jobsite (telephone, Gai-Tronics, radios) during the Alert for purposes not directly related to handling the emergency.

CN-10-3 11.4 A list of telephone extensions that may be required during an Alert is provided in Attachment 3.7.

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CN-10-3 11.5 All Assembly Areas are provided with Gai-Tronics phones.

11.6 All Assembly Areas and the Time Office will be provided with a radio on the Stone & Webster or the Security Guard Frequency. To accomplish this, the following personnel will report to the Assembly Areas indicated.

D. Adams - Dick Building
A. Azzinaro - Dick Building
CN-10-10 K. Kollmann - Warehouse A
CN-10-10 C. McKinney - Schneider Building
CN-10-10 S. Grady - Paint Shop
CN-10-10 J. Garrity - SEO
J. Novak - DLC QA Building
CN-10-10 N. Shibley - S&W Administration
D. J. Wiatrak, D. Fink - Time Office
L. Kaleugher - Sargent Building

Other personnel who carry radios are assigned to the Stone & Webster Building, Sargent Building and DLC Construction Building. Dual frequency radio carriers are assigned to the following areas:

S&W Administration Building - S&W Employees.
DLC Construction Building - DLC Employees.
S&W Time Office - D. J. Wiatrak
Security Office - Paul Anthony.

12.0 UNSCHEDULED WORKING HOURS SPECIAL ALERT

12.1 In the event of a Special Alert during unscheduled working hours (nights, weekends, holidays, etc.), Jobsite occupants shall report to Assembly Area No. 6 in the Dick Corporation Change Area.

CN-10-10 12.2 The person responsible for implementing this procedure during unscheduled working hours will be (in order of precedence):

12.2.1 The ranking DLC representative,

12.2.2 The ranking Stone & Webster representative, or

12.2.3 The ranking Security Guard Officer.

This person will account for personnel in the Assembly Area and report name and badge number of personnel to Main Gate.

CN-10-10 12.3 The Guard Shift Supervisor will be responsible for accounting for personnel and reporting to the person in charge (as defined in Section 12.2).

12.4 When the accountability becomes available, the person identified as being responsible in Section 12.2 above shall report the accountability to the BVPS Unit I Accountability Supervisor at the BVPS Unit I Guard House by telephoning 643-5360 or via DLC Pax Number 5114.

AREA CO-ORDINATORS REPORT AREA CO-ORDINATOR__________

ASSEMBLY AREA NO.________ DATE__________________

PERSONNEL ASSIGNED TO YOUR ASSEMBLY AREA BUT NOT ACCOUNTED FOR

(Note: This section will include all personnel who are on personnel roster as of the time of the alarm, but not accounted for in the assigned assembly area.)

BADGE NO.*	NAME	BADGE NO.*	NAME	BADGE NO.*	NAME

PERSONNEL NOT ASSIGNED TO YOUR ASSEMBLY AREA

BADGE NO.*	NAME	COMPANY	BADGE NO.*	NAME	COMPANY

VISITING PERSONNEL

BADGE NO.*	NAME	VISITORS CO.	BADGE NO.*	NAME	VISITORS CO.

* Include employer code with badge number.

SITE OCCUPANTS EXIT LOG

GATE/POST NO. ________

This log will be used by Guard Gates to report any employee who exited the perimeter fence after reporting for work, and any non-employee who exited at a gate other than the one he entered.

SITE PERSONNEL		VISITING PERSONNEL		
BADGE NO.*	COMPANY	BADGE NO.*	NAME	COMPANY

* Include employer code with badge number.

THIS REPORT MADE BY ________ DATE ________

VISITOR, SERVICE, NEW HIRE AND TEMPORARY BADGE LOG

This log will be used by guard gates to report all Visitor, Service, New Hire and Temporary Badges and Picture Badges of persons on non-employee, badge rack which were issued as of the time of the alarm.

NAME	BADGE NUMBER * Temporary or Visitors	Picture	COMPANY REPRESENTED

GATE POST NUMBER ______________ Date ______________

THIS REPORT MADE BY ______________________________

* List both badge numbers of employees who were issued temporary badges.

BADGE BOARD STATUS REPORT

GATE/POST No. ___________

This report will be made by all Gate Posts that maintain Badge Boards. It indicates those Site Personne that did not report to work this date.

BADGE NO.	COMPANY	BADGE NO.	COMPANY	BADGE NO.	COMPANY

THIS REPORT MADE BY ______________________________ DATE ________________

LIST OF ASSEMBLY AREAS AND AREA CO-ORDINATORS

ASSEMBLY AREA NO.	ASSEMBLY AREA LOCATION	OCCUPANTS ASSIGNED TO ASSEMBLY AREA	AREA CO-ORDINATOR AND ALTERATE		ASSEMBLY AREA PHONES	
1	Stone & Webster Administration Building	Stone & Webster Personnel	DLamson* PGoode ORoach	JDimond NShibley GOrr	118 113 110	117 111
2	Duquesne Light QA Building	DLC, QA and QC Personnel	CEarnest* GKaloz PKisaday	JNovak RShutty AMosso	306	305
3	Duquesne Light CDN Building	DLC-CDN Personnel	JFahrny* FCurl SSmajda	CWertz WSnider JGverara	294	292
4	Sargent Building	Sargent Electric Co. and Zurn Corp. Personnel	ESargent* TKautz JRoman	RHineman CNaggy FDerbaum	412 408	410 406
5	Schneider Building	Schneider Power Corp. Schneider Sheet Metal and PDM Personnel	MWayhart* JLienert MJoyce JZeilinski	SChase CO'Reilly TMayconich TRichards	81-55 81-11 81-10	81-33 81-27
6	Structural Building	Dick Corp., Dick Corp. Subcontractors Personnel	FGinocchi* JFigley GEvans	DAdams RSchloesser DFluharty	643-1158 643-1172 417 288	289 287
7	Warehouse A	BVBS and Steel-Bilt Personnel	RNelson* ARadella HHogsett	GBingham AChampagne WHuysman	354	
8	Paint Shop	Stuart Paint, Hake, EWL, PBI and Cindrich Personnel	PPullin* KDesai LNicoludis	SGrady DCoffe RGratzinger	442	
9	Site Engrg. Building	SEO, DLC Unit 1 QA, and NSC Personnel	JPurcell* RJFaust RRadakovic	JFlynn CDHoumiller SPaxton	243	250

Small Subcontractors will be assigned Assembly Areas by the Stone & Webster Safety Supervisor when they arrive on site.

NOTE: Personnel in Laydown 2 at time of alarm will report to Laydown 1. Personnel in Laydown 1 will remain there. Personnel on the East side of Route 168 bridge road at time of the alarm may report to Warehouse A, but will be shown on the Assembly Area Co-ordinators Report as "personnel not assigned to that assembly area".

*Designates Team Captain

LIST OF PERSONNEL ACCOUNTING TEAM MEMBERS

TITLE	NAME
Team Director	F. Wain
Team Director - Alternate	D. Fink
Team Member	R. L. Connor
Team Member	M. Diamond
Team Member	D. J. Wiatrak
Team Member	P. Riley/P. McGeehan
Team Member	Clock Alley Guard
CN-10-10 Team Member	Key Sargent

Personnel Accounting Team will assemble in the Stone & Webster Time Office. Telephone extensions in the Time Office are 182, 183, 221 and 222.

A Gai-Tronics phone is located in the Stone & Webster Time Office.

SPECIAL ALERT TELEPHONE LIST

DLC Superintendent of Nuclear Construction	364
Stone & Webster Resident Manager	364
Stone & Webster Superintendent of Construction	110
Stone & Webster Superintendent of Support Services	113
Stone & Webster Safety Supervisor (Time Office)	182, 183, 221, 222
Stone & Webster Site Security Officer	195, 196
SBI Security Guard Captain	193
Personnel Accounting Team (Stone & Webster Time Office)	182, 183, 221, 222
Shippingport Atomic Power Station General Office	643-4600
Shippingport Atomic Power Station Control Room	643-4601
Shippingport Atomic Power Station Main Security	643-8291
BVPS Unit 1 Emergency Control Center	643-8002
BVPS Unit 1 Main Gate Security	643-5360
BVPS Unit 2 Main Gate Security	194, 441
BVPS Unit 2 Visitors Gate Security	197, 198
Laydown Area 1 Security Guard	192
Gate 9 Security Guard	197
Night Shift Assembly Area (Dick Corporation Change Area)	417

Refer to Attachment 3.5 for Assembly Area Phone Numbers.

DLC PERSONNEL OUTSIDE UNIT 1 PROTECTED AREA ASSEMBLY/EVACUATION

1.0 OBJECTIVE

This procedure provides instructions for assembling DLC personnel located outside the protected area, who do not have emergency assignments, at the Administration Building, DLC-QC Building, Security Training Trailers, Maintenance Trailers, and the New Training Center Building. DLC personnel located within the protected area shall report to the Primary Assembly Area (Locker Room), as per EPP/IP 3.2.

The most senior DLC Supervisor of the office/records group who is located in the Administration Building assembly area shall be responsible for implementation of this procedure.

2.0 PREREQUISITES/INITIATING CONDITIONS

2.1 The Emergency Director has ordered a Unit Evacuation (as per EPP/IP 3.1), or personnel accountability (as per EPP/IP 3.2) and station personnel have been instructed to report to their designated assembly area over the plant party system.

3.0 PROCEDURE

3.1 Personnel located outside the protected area in Unit 1 who do not have emergency assignments shall report to the nearest assembly area listed below and wait further instructions:

- Administration Building (See Figure 1)
- Maintenance Training Trailers
- Security Training Trailers
- DLC-QC Building
- New Training Center Building

Designated personnel with emergency assignments shall proceed directly to to their assigned emergency station.

3.2 Personnel located within the protected area of Unit I shall proceed to the locker room (with exception of Control Room assigned personnel), and enter their badge in card reader. Designated personnel with emergency assignments shall then proceed to their assigned onsite emergency station (see EPP/IP-3.2). If they are assigned to an offsite (TSC/EOF) emergency location, they shall proceed directly to that offsite location exiting through the guardhouse without having their badge read in the locker room area.

3.3 The most senior DLC Supervisor of the office/reocrds group located in the Administration Building Assembly Area shall:

3.3.1 Call and inform personnel located in the following areas of the emergency, since instructions over the plant page party system may not have been heard at all locations:

- o DLC-QC Building (643-9806, PAX 5271)
- o Security Training Trailers (PAX 5193)
- o Maintenance Training Trailers (PAX 5194)
- o New Training Center Building (643-5141)

3.3.2 In the event of a radiological emergency, follow general instructions (Attachment D) and review instructions with personnel assembled in the area.

3.3.3 At the Administration Building, designate personnel to move the air sample cart (see Figure 1) to the assembly area and to perform a radiation check utilizing the dosimeters located in the emergency kit as per Attachment A. Report the results to the Radiological Controls Coordinator via the Radcon Operations Center (PAX 5120 or 643-5022).

3.3.4 At the Administration Building, designate personnel to perform an air sample, as per Attachment B. Document the results on Attachment C and request a Radtech to collect the sample for counting purposes from the Radcon Operations Center (PAX 5120 or 643-5022).

3.4 The most senior supervisor in each of the assembly areas devoted in step 3.1 shall:

3.4.1 Request personnel to assemble in the designated location, and have supervisors account for personnel under their supervision. The building and outside area should be checked to verify all personnel in the vicinity have received the message to assemble.

3.4.2 In the event of a radiological emergency, follow general instructions (Attachment D) and review instructions with personnel assembled in the area.

3.4.3 Refer to Attachment E to shut down the Administration Building ventilation or Attachment F to shut down the New Training Center Building Ventilation.

3.4.4 Report to the Security Coordinator in the main guardhouse (643-5954, PAX 5114) that personnel in their respective assembly area (and general vicinity) have been assembled and accounted for.

3.4.5 Remain in assembly area and await further instruction.

3.4.6 If a site evacuation is ordered, proceed in a safe and orderly fashion to the designated offsite assembly area.

4.0 ATTACHMENTS

A. Dosimeter Instructions

B. Use of Radeco Air Sampler

C. Air Sample Record

D. General Instructions

E. Administration Building Ventilation System Shutdown.

F. New Training Center Building Ventilation System Shutdown.

5.0 FIGURES

1. Administration Building Assembly Area.

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Attachment A - Dosimeter Instructions

PURPOSE

The dosimeters maintained in the emergency cabinet will be utilized during the performance of a radiological emergency at the site.

INSTRUCTIONS

1. Remove dosimeters from storage and read dosimeters.

   Note time________________.

2. Wait ten minutes. (Monitor dosimeter readings).

3. Read both dosimeters again.

   a. For dosimeter having a range of 0-500 mR, if either reading has advanced one scale increment (20 mR/10 min. = 120 mR/hour), this indicates evacuation may be necessary. In such case, contact the Radiological Controls Coordinator via the Radcon Operations Center (PAX 5120 or 643-5022).and inform them of your reading.

   b. If the 120 mR/hour reading is not exceeded (one scale increment in ten minutes), repeat reading the dosimeter every ten minutes, until instructed by the TSC/EOF that the emergency no longer exists or advised by the TSC/EOF that the continued dosimetry reading is no longer necessary during the emergency.

Duquesne Light

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ATTACHMENT B - RADECO AIR SAMPLER

PURPOSE

The Air Sampler maintained in the emergency cupboard is to be utilized for sampling for airborne radioiodine in the event of an emergency.

PROCEDURE

1. Ensure that the filter paper and charcoal cartridge is properly in place.
2. Attach sampler to power supply and turn unit on. Note time below

   Time Sampler on ______________________

3. Note flow rate via the flow gage mounted on the sampler and record below. (Volume of air to be sampled is 35 cu. ft.)

   Flow Rate ______________________ CFM

4. Divide 35 cu. ft. by sampler flow rate to establish time of air sample (see sample calculations below).
5. Operate sampler for the time determined below, and turn unit off. Note time below.

   Time Sample off ______________________

6. Fill in the required information on Attachment C - "Air Sample Record" form.
7. The sample will be collected by a Radtech for counting in accordance with Radcon procedures.

Sample Calculation:

Step 3: Air Sampler Flow Rate = 5 CFM

Step 4: 35 Cu. Ft. ÷ 5 CFM = 7 Minutes

Step 5: Operate Sampler for 7 Minutes (Total)

AIR SAMPLE RECORD

(To Be Filled Out By Person Operating Sampler)

Date:________________________ Area Monitored:____________________

Reason For Monitoring:____________________ By:____________________

Air Sampler Flow Rate = ____________________CFM

35 Cu. Ft. ÷ ____________________CFM = __________Minutes

Operate Sampler for____________________Minutes (Total)

Sampler Type:________________________Serial No.:________________

____

Sample Calculations:

Step 3: Air Sampler Flow Rate = 5 CFM

Step 4: 35 Cu. Ft. ÷ 5 CFM = 7 Minutes

Step 5: Operate Sampler for 7 Minutes (Total)

NOTE: The Radtech will collect the sample and this Air Sample Record Form.

"FOR RADIOLOGICAL EMERGENCY"

GENERAL INSTRUCTIONS

1) CLOSE ALL DOORS AND WINDOWS

2) SHUT DOWN VENTILATION SYSTEM

3) NO EATING, DRINKING OR SMOKING

4) REVIEW INSTRUCTION PROCEDURES

5) START ASSEMBLING PERSONNEL/ACCOUNTABILITY

5) AVOID PANIC

7) READ DOSIMETERS AND LOG TIME

8) START AIR SAMPLER AND LOG TIME

9) KEEP PAGE SYSTEM AND PHONES CLEAR FOR USE DURING EMERGENCY

10) FIRST AID KIT IN OFFICE (IF NEEDED)

11) LISTEN FOR INSTRUCTIONS

12) IF EVACUATION OF SITE IS DIRECTED, LEAVE IN A SAFE AND ORDERLY FASHION

ADMINISTRATION BUILDING
VENTILATION SYSTEM SHUTDOWN

To shutdown the ventilation system in the Administration Building, perform either of the following:

1.1. Trip the main switch breaker--JL Breaker #1, Power Panel PP3

Panel is located in the main power supply room (second door on the left on corridor leading to exterior stairwell (requires key A-7 or master).

2. Trip fan safety switches:

AHU #1 Fan (east ventilation unit)

AHU #2 Fan (west ventilation unit)

AHU #3 Fan (records room ventilation)

OR

Switch the ventilation controls to "off" position on the Ventilation Control Panel and Records Room Ventilation Panel.

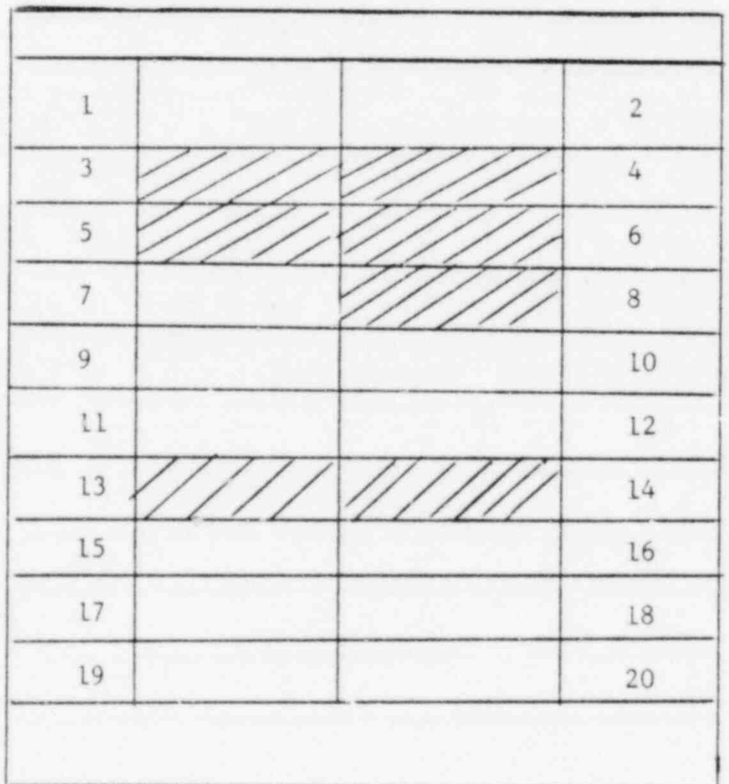
Safety switches are located in the penthouse (requires key A-3 or master).

NEW TRAINING CENTER BUILDING VENTILATION SYSTEM SHUTDOWN

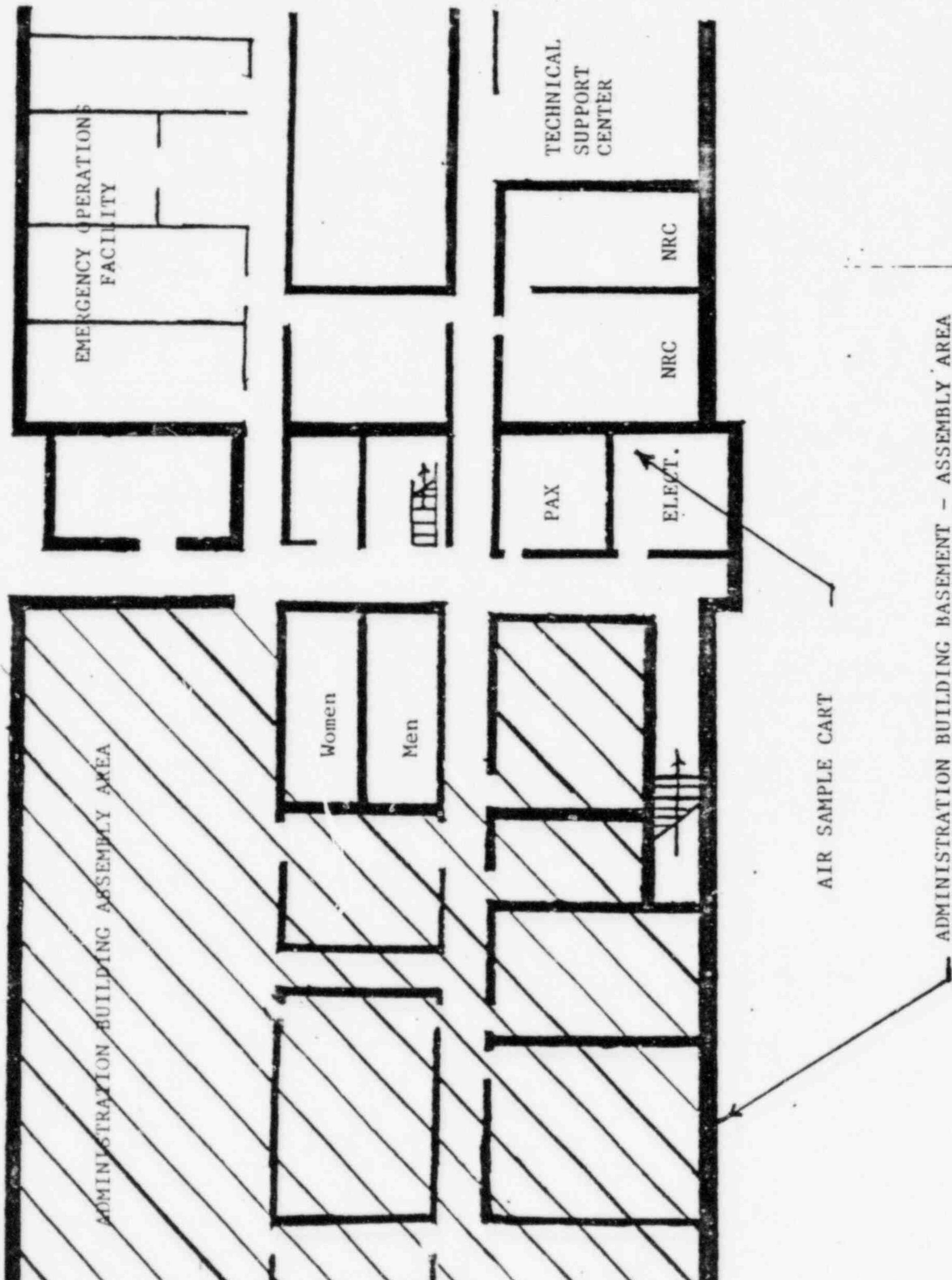
1. Proceed to the Mechanical Equipment Room, which is located at the end of the last corridor, left of the Main Entrance, on the first floor.

2. Locate the Main Distribution Panel, which is located in the back far corner of the Mechanical Equipment Room.

3. Trip breakers 3, 4, 5, 6, 8, 13, 14.



Lay Out-Main Distribution Panel


EMERGENCY OPERATIONS FACILITY
TECHNICAL SUPPORT CENTER
NRC
NRC
PAX
ELECT.
Women
Men
ADMINISTRATION BUILDING ASSEMBLY AREA
AIR SAMPLE CART
ADMINISTRATION BUILDING BASEMENT - ASSEMBLY AREA

EMERGENCY IMPLEMENTING PROCEDURE

PERSONNEL ACCOUNTABILITY

A. OBJECTIVE

This procedure provides instructions for accounting for personnel and visitors onsite in the event of an evacuation of plant areas. This procedure applies to local, unit, or site evacuations. Also addressed in this procedure is maintaining accountability of emergency personnel and other essential personnel remaining behind during an evacuation.

The Security Coordinator is responsible to ensure the actions outlined in the procedure are implemented.

This procedure is primarily directed at accountability for evacuations initiated by actual or imminent radiological conditions. It also applies, when appropriate, to evacuations related to other habilitity hazarads, such as toxic gases or fire.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition at the Beaver Valley Power Station has resulted in radiological conditions which make personnel evacuation to unaffected areas necessary.

and/or

2. An emergency condition at the Shippingport Atomic Power Station has resulted in the significant release of radioactivity which affects habitability and mandates an evacuation of areas within the BVPS protected area fence.

C. PRECAUTIONS

none

D. GUIDANCE AND CRITERIA

1. Responsibility

1.1 Local Evacuation

The responsibility for maintining personnel accountability in the the event of a local evacuation, rests with the supervisory personnel providing access control and radiological coverage on that area (if applicable). These individuals are responsible for ensuring that all personnel have cleared the affected area and reporting the same to the Control Room.

1.2 Unit 1 Construction Group Accountability

Accountability for construction group personnel is discussed in EPP/IP-3.1.1, "Unit 1 Construction Group Evacuation Plan".

1.3 Unit 2 Construction Group Accountability

Accountability for Unit 2 construction forces is discussed in EPP/IP-3.1.2, "Unit 2 Construction Group Evacuation Plan".

1.4 DLC Personnel Outside Unit 1 Protected Area

Accountability for Administration Building personnel and other personnel outside the protected area of Unit 1 is addressed in EPP/IP-3.1.3, "DLC Personnel Outside Unit 1 Protected Area Evacuation/Accountability".

1.5 Personnel Within Unit 1 Protected Area

Accountability for personnel within the Unit 1 protected area fence, other than construction and contractor groups covered under EPP/IP-3.1.1, but including vistors and contractors not covered by EPP/IP-3.1.1, is discussed in this procedure.

1.6 Shippingport Atomic Power Station and Miscellaneous Onsite Buildings

Accountability for personnel within the SAPS protected area fence, or in SAPS-related buildings outside the protected area, is addressed in the SAPS Emergency Preparedness Plan. Accountability for personnel in buildings onsite, but outside of BVPS-1, BVPS-2, or SAPS is addressed in this EPP/IP.

E. PROCEDURE

1. Local Evacuation

1.1 The number of personnel involved in a local evacuation is normally small, and involves areas which, when occupied, are normally attended by supervisory and/or Radcon personnel.

1.2 Upon receipt of a local area radiation monitor or continuous air monitor alarm, or upon observation of abnormal radiation levels (via portable survey instruments), personnel in the affected area will evacuate the affected area and relocate to an unaffected area. The senior individual present will ensure that all personnel clear the affected area and will notify the Control Room for further instructions.

1.3 If access to the area is controlled by a manned Radcon control point, Radcon personnel will assist personnel in the removal or protective clothing and/or respiratory protection equipment and in monitoring in order to facilitate clearing the affected area. The Radcon Technician(s) will account for all personnel in the area using Radiation Work Permit and Radiation Clearance records, and will notify the Control Room when all personnel have been accounted for and are clear of the affected area.

NOTE

The primary method of accounting for station personnel is by means of the computerized card-key security system. This system has provisions for identifying and printing a listing of all personnel is selected areas of the Station. Station personnel update their whereabouts in the computer by inserting their security badge/card-key in readers adjacent to security doors leading to these areas. Sections 2 and 4 identify means of accountability by this system. Sections 3 and 5 describe back-up means if the card-key system should fail.

2. Unit Evacuation--Card-key System Operable

2.1 Personnel exiting the Primary Auxiliary Building are normally required to insert their security badge/card-key into a reader to unlock the exist door from the PAB to the Locker Room. (Contractor personnel are required to do likewise to exist the PAB via their designated evacuation routes.) During an emergency, personnel will not insert their security badge/card-key in this reader, but will use the readers in the designated assembly area, in order to facilitate clearing the PAB. Station personnel in the Turbine Building or the Service Building will proceed to the Locker Room.

2.2 Upon arrival at the primary assembly area, personnel will insert their security badge/card-key into one of the two card-readers located in the assembly area, wait until the small "ready" lamp lights up, remove the card, and stand aside in the Locker Room for further instructions. An on-duty security guard will proceed to the Primary Assembly Area and, with the assistance of DLC/BVPS supervisory personnel present, will assist personnel in the assembly area with this process. The two primary assembly area card-readers do not operate any doors and are installed solely for accountability use. Inactive during normal operations, they are activated by security personnel in the Central Alarm station by direction of the Security Coordinator. Construction personnel will be accounted for by card-readers located in the DLC Alternate Access Building enroute to their designated assembly areas.

2.3 The designated Security Coordiantor will proceed to the Main Guardhouse to coordinate accountability efforts and direct guard house personnel with the print-out and analysis of accountability reports. This is accomplished by comparison of primary assembly area and Control Room print-outs with the protected area accountability computer print-outs. Appropriate accountability reports shall be made to Security Coordinator, who in turn will report the results of the accountability to the Emrgency Director. If necessary, search and rescue operations shall be conducted for personnel listed as being within the Station and who have no reason for remaining behind (eg: emergency assignments).

2.4 Personnel outside of the protected area fence when an unit evacuation is initiated shall proceed to the nearest designated assembly area, identified in EPP/IP 3.1.3.

2.5 Personnel with emergency assignments inside the protected area will proceed to those assignments, entering the Station Guard House, picking up his security badge/card-key, and dosimetry devices as he passes through the guardhouse.

2.6 Personnel within the protected area who have assignments at the Technical Support Center, or other location outside of the protected area, will proceed to that assignment, exiting through the guardhouse having his security badge/card-key read at the Locker Room.

2.7 If the Control Room/EOF directs an individual, who has already been accounte for in the Primary Assembly Area, to another location in the plant, the individual should proceed to that location, using his security badge/ card-key as normally done to gain access to the various areas of the plant.

3. Unit Evacuation - Card-Key System Inoperable

Upon decision to implement an evacuation, the Emergency Director will direct the BVPS Security Force to initiate personnel accountability measures as follows:

3.1 An on-duty guard shall be directed to carry the in-service personnel security badge racks to the designated primary assembly area. The racks will be hung in the primary assembly area, sufficiently separated to minimize congestion.

3.2 An onduty Security Supervisor will proceed to the primary assembly area and assume the functions of Accountability Supervisor. The Accountability Supervisor, with the assistance of other DLC/BVPS supervisory personnel present, will proceed as follows:

3.2.1 The accountability Supervisor shall direct personnel in the assembly area to locate the badge rack and badge slot corresponding to their badge number, and place their SECURITY badge in thappropriate slot. Personnel shall retain their TLD and dosimeter(s).

3.2.2 The Accountability Supervisor will record the identificaiton number of all missing badges on the racks in the assembly area, cross-checking badges on the racks, to ensure that they are in the proper slots.

3.2.3 The Operations Support Center and the Control Room will be contacted by the Security Coordiantor, and those stations requested to report the badge numbers of the personnel present in those areas, or those personnel whose whereabouts are known (ie: Emergency Squad).

3.2.4 Appropriate means, such as contacting the individual's supervisor asking co-workers, contacting other assembly areas, paging, or telephoning, shall be performed to locate personnel still unaccounted for following step 3.2.2., 3.2.3, and 3.2.4.

3.2.5 When accountability is complete, and/or when requested by the Security Coordinator, report the results of the accountability, identifying missing persons, if any. In either case, a report shall be made. If accountability cannot be completed within a reasonable period of time, a report sahll be made to the Secur'ty Coordiantor. Upon receipt of this report, the Security Coordinator should report the results to the Emergency Director and, if necessary, initiate search and rescue operations at the direction of the Emergency Director.

3.3 The designated Security Coordinator will proceed to the Station Guard House to receive accountability reports and coordinate accountability efforts. The Security Coordinator will designate an individual to proceed to the TSC location to act as security liaison in the TSC.

3.4 The Security Coordiantor shall contact the other assembly areas for reports on the status of their accountability efforts if a report is not received within a reasonable period of time. When all assembly areas have reported, the Security Coordiantor will report the overall accountability status to the Emergency Director.

3.5 Personnel outside the protected area fence when an unit evacuation is initiated shall proceed to the Administration Building Assembly Area, except those located in the New Training Building, DLC-QC Building, Maintenance Trailers, Security Training Trailers, or as directed by other applicable accountability/Evaluation procedures (Unit 1 Contruction, Unit II Construction, Subcontractors, etc...)

Personnel with emergency assignments outside the protected area should identify themselves to the security guards in the guardhouse and proceed to their emergency assignment. Since the security badges will no longer be in the guardhouse, the security guard will record the individual's name and DLC employee number. The individual will then proceed to the primary assembly area, report to the Accountability Supervisor, and pick-up his security badge and TLD/dosimeter, prior to proceeding to his emergency assignment.

3.6 Personnel within the protected area who have emergency assignments at the Technical Support Center, or other location outside of the protected area, will proceed to the assembly area, turn in their SECURITY badge, check-out with the Accountability Supervisor, and exit the Station via the guardhouse.

4. Site-Evacuation--Card-Key System Operable

4.1 Personnel accountability for site evacuation will be administered in a manner similar to that which is normally used to control personnel access to the Station. However, during an emergency, the existing turnstyles will be placed in "free-wheeling". Station personnel exiting the Station will turn in their security badge/card-key to security personnel and then pass through the turnstyle without waiting for the card-key to be read. Security personnel will read each security badge/card-key thus collected. This action clears the individual from the accountability data base. After all of the card-keys have been read, the security badge/card-key system can be interrogated to determine personnel still within the Station and their whereabouts. This information is to be reported to the Security Coordinator, who in turn will report the results of the accountability to the Emergency Director.

4.2 Perform other actions in accordance with applicable steps in section 5.

5. Site Evacuation--Card-key System Inoperable

5.1 If a site evacuation is implemented following assembly of Station personnel in the Primary Assembly Area, personnel assembled will be directed offsite from the assembly area. Supervisory personnel will ensure that all personnel accounted for exit the Station. No further accountability is required if accountability was complete at the primary assembly area, otherwise continue efforts to locate missing persons. Personnel will turn in their TLD/dosimeters as they exit the guardhouse.

5.2 If a site evacuation is ordered without prior assembly of personnel, the on-duty Security Supervisor will assume the responsibilities of the Accountability Supervisor and perform the actions assigned in Step 2 from the Unit 1 guardhouse. Station personnel will proceed as follows:

5.2.1 Personnel will exit the Station via the security post through which they entered the site. For BVPS personnel, this is the Unit 1 guardhouse, for construction personnel, this is the trailer city guardhouse (or other designated locaiton).

5.2.2 As personnel exit the station, they will turn in their security badges and TLD/dosimeters. (Personnel with emergency assignments onsite shall retain their TLD and dosimeters.)

5.2.3 Security personnel will determine which personnel have not exited the Station, by noting the missing badges. Appropriate means will be performed to locate missing persons as in Step 3.1 of this EPP/IP.

5.2.4 When accountability is complete, or when requested by the Emergency Director, the security personnel will report the results of the accountability, identifying missing persons, if any. In either case, a report is required. If accountability cannot be completed within a reasonable period of time, a report shall be made to the Security Coordinator, and the appropriate search and rescue measures initiated by the Emergency Director.

5.3 The Operations Support Center Coordinator, Technical Support Center Coordinator, and the various TSC coordiantors shall maintain accountability for personnel performing emergency measures under their direction.

5.4 At the direction of the Emergency Director, BVPS security personnel shall implement a building by building search of buildings (and trailers) on-site but outside of the Unit 2 security fence or the SAPS protected area fence, and search parking lots and site roads for stragglers and others who may have not heard the evacuation alram and announcement. All individuals without a valid reason to be onsite shall be directed offsite. A visual check should be made of the waterfront and Phillis Island and any individuals found, should be directed away from the area.

5.5 The DLC Manager, Nuclear Construction (643-8800 x 364) (normal working hours) or the S & W guardhouse (643-8800 x417) (off hours) should be contacted to determine the status of accountability efforts at Unit 2.

5.6 Following completion of accountability efforts and any search and rescue operations, or as directed by the Emergency Director, the Security Coordinator will relocate the security force (with the exception of those necessary to maintain a security posture) to the designated remote assembly area and await further instructions.

5.7 To control personnel accountability following evacuation, only those personnel with express permission from the BVPS TSC (or from the SAPS ECC, as appropriate), shall be authorized access to the site. The security force will establish an appropriate security posture, in accordance with the Station Security Plan to control access, until such time as the radiological conditions permit re-establishing the normal security program (or an appropriately modified program).

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.
2. Beaver Valley Power Station Security Plan
3. Title 10 CFR Part 50 Appendix E
4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radilogical Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.
5. NRC Inspection Report 50-334 #81-27 (paragraph E.5.5 is a response to a finding.)

G. ATTACHMENTS

1. Telephone Listing for Assembly Areas.

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TELEPHONE LISTING FOR ASSEMBLY AREAS

BVPS Control Room	PAX 5110
BVPS Control Room - NSS Office	PAX 5102/5172
DLC-BVPS Primary Assembly Area (Locker Room)	PAX 5149 (or Page)
New Training Center Building	643-5141
Security Training Trailers	PAX 5193
Maintenance Training Trailers	PAX 5194
DLC - QC Building	643-9806/PAX 5271
Unit 1 Construction Assembly Area (Trailer Complex)	643-8917 (or Page)
Unit 1 DLC CDN Construction	PAX 5169 (or Page)
Unit 2 Construction Evacuation Control Center	PAX 5105 (or Page)
Operations Support Center (Emerg. S/D Panel Area)	PAX 5174 (or Page)
Kennedy's Corner Substation	PAX 5195
Hookstown Substation	PAX 2190
SAPS Control Room	PAX 2102
SAPS Guard House	PAX 2135
BVPS-1 Guard House (CAS Room)	643-5954/PAX 5114 (or Page)
BVPS-2 Guard House	643-8800/8801 or PAX 5194
Interim TSC (Admin. Bldg.)	643-5507 or PAX 6302
Interim EOF (Admin. Bldg.)	643-5502 or PAX 5212
Radcon Operations Center	PAX 5120

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EMERGENCY CONTAMINATION CONTROL

A. OBJECTIVE

During an emergency condition, substantial quantities of radionuclides may be released to the Station or to the environment. As a result, there will likely be an increase in contamination levels. This procedure provides general guidance to the TSC staff to supplement the guidance contained in the Radiation Control Manual (RCM) and/or the Radiation Protection Procedures.

The Radiological Controls Coordinator is responsible to implement this procedure when necessary.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition has been decleared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.
2. As a result of the emergency condition, significantly abnormal contamination levels are noted.

C. PRECAUTIONS

1. Skin contamination less than one (1) rad per hour is unlikely to be immediately life-threatening, and therefore, skin decontamination efforts should never take precedence over necessary first aid.
2. Accidents related to fuel degradation and leakage of reactor coolant may result in alpha contamination in addition to the typical beta-gamma radionuclides. If alpha activity is suspected, a random selection of swipes (and air samples) should be counted for alpha activity. The size of the random selection should be decreased or increased on the basis of the initial alpha count results and/or the results of the reactor coolant activity analysis.

D. GUIDANCE AND CRITERIA

1. General

The Beaver Valley Power Station Radiation Control Manual (RCM) contains provisions governing the control of contamination. Chapter 3 of the RCM contains procedures that implement the RCM provisions. The requirements and guidelines of these documents shall apply to contamination control during emergency conditions except as specifically provided in this EPP/IP, the BVPS Emergency Preparedness Plan, and/or by direction of the Radiological Control Coordinator/Emergency Director.

2. Contamination Control

2.1 It may become necessary to extend the boundaries of the controlled area. Appropriate access control and associated contamination control measures shall be established for any area in which contamination exists at levels higher than that specified for a clean area in the RCM.

2.2 Personnel and equipment monitoring and release procedures and criteria shall remain in force to the extent possible. There may be exceptions applicable to emergency conditions, as follows:

2.2.1 If background dose rates at normal monitoring locations preclude detection of levels of contamination equivalent to the clean limit, monitoring shall be moved back to a location where this can be done. However, if significant levels of contamination exist, it may be appropriate to perform a gross screening at the exit of grossly contaminated areas, to be followed by a more complete monitoring at a more suitable location.

2.2.2 If dose rates within the contaminated area (or controlled area) warrant an immediate evacuation, personnel monitoring shall not be required prior to evacuation. If possible, personnel exiting such areas should remove any clothing thought to be contaminated, or don clean coveralls to minimize the spread of potential contamination, pending subsequent monitoring. In this case, appropriate monitoring should be performed at the designated assembly area.

2.2.3 Contamination limits for release of personnel, equipment, and areas specified in the RCM shall remain in effect to the maximum extent possible. The Radiological Control Coordinator will determine when a change in contamination limits is applicable and will establish appropriate revised limits.

However, under site evacuation conditions, decontamination is normally mandatory if the contamination exceeds 1800 pCi/100cm^2.

2.3 The conditions under which a Site evacuation would be initiated might involve significant releases with resultant contamination of environmental surfaces offsite. Under these conditions, delaying site evacuation to monitor and/or decontaminate personnel or vehicles would be inconsistent with maintaining exposures as low as reasonably achievable, and may be superfluous in light of the potential for re-contamination offsite. The following procedures should be used:

2.3.1 Personnel should be directed to the upwind remote assembly area for monitoring. Radcon shall monitor personnel on the basis of a screening process to identify contaminants in excess of 1800 pCi/100cm^2. Personnel monitoring should basically consist of checking hands, feet, and the face with an E140/HP210 or equivalent survey instrument.

1. Personnel identified as contaminated should be segregated to an area for eventual decontamination.
2. Documentation of the extent and magnitude of the individual's contamination will be performed after the initial segregation phase of the group monitoring.

2.3.2 If both assembly areas are within sectors from which the population is being evacuated, the Emergency Director, in cooperation with DLC management and State and county agencies shall designate an assembly area at which personnel monitoring will be performed. In this event, personnel and vehicles will be monitored the same as members of the general public as provided in the emergency plans of the affected jurisdictions.

2.4 For rescue efforts in which there is a potential for the imminent death of the victim, and for which the magnitude of radiological conditions in the affected area are generally known, an emergency squad member(s) should proceed to the scene without protective clothing to assess the situation and render first aid. Other members of the Emergency Squad should don appropriate protective clothing and proceed to the area to assist. The initial emergency squad member(s) should leave the area and be monitored and/or decontaminated as soon as possible.

2.5 For fire-fighting efforts, normal fire-fighting gear (helmets, coats, boots, gloves, etc) may take the place of protective clothing. This apparel is as likely to provide protection from contaminated water spray.

3. Decontamination

3.1 Personnel decontamination shall be performed as provided in the RCM and in Radiation Protection Procedures.

3.2 Contaminated/injured personnel should be decontaminated prior to transfer to the hospital, if possible, and if compatible with the extent of the injuries. Even a superficial initial decontamination to remove the loose contamination will help minimize the contamination of ambulances and hospital facilities and personnel. Refer to EPP/IP-5.2, "Handling of Contaminated/Irradiated Personnel Injuries".

3.3 Most cases of skin decontamination with radioactive materials can be decontaminated by Radcon personnel using methods established in the Radiation Protection Procedures. Refer to RCM Chp #5 REOP-3.1 "Personnel Decontamination -- Serious or persistent Contamination". If the contamination is not removed by these initial methods, if decontamination has resulted in excessive irritation of the skin, or if contamination has entered wounds or body openings, medical assistance should be sought. The urgency of such treatment will depend on the dose rate attributable to the contamination. Except in cases of high-level contamination, over about one rad per hour including beta radiation, as measured with an ion-chamber instrument (4-7 mg/cm^3 window), there is no urgency to complete skin decontamination. If the skin contamination is the primary health hazard or if persistent contamination remains after decontamination efforts, Dr Wald and Dr. Spritzer should be consulted, and the individual transferred to the Presbyterian-University Hospital for evaluation and treatment, at the direction of Drs. Wald & Spritzer. Refer to EPP/IP-5.4.

3.4 Decontamination of persons with significant internal contamination shall be refered to medical personnel at the Presbyterian-University Hospital or the RERP program for evaluation and treatment. In the event of a significant uptake of radioiodine, potassium iodide may be administered in accordance with EPP/IP-3.4, "Emergency Respiratory Protection".

E. PROCEDURE

Procedures for contamination monitoring and decontamination are contained in the RCM, subject to changes as identified in Section D of this EPP/IP.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures
2. Beaver Valley Power Station Radiation Control Manual
3. Title 10, CFR Part 20 and 50
4. NCRP Report No. 65, "Management of Persons Accidentally Contaminated with Radionuclides"
5. ICRP Publication 28, "The Principles and General Procedures for Handling Emergency And Accidental Exposures of Workers"
6. NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

G. ATTACHMENTS

1. None.

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EMERGENCY RESPIRATORY PROTECTION

A. OBJECTIVE

In an emergency condition during which airborne radioactivity occurs, normal respiratory protection measures may be inadequate due to increased radioactivity levels, or may be undesireable or unsuitable due to its impairing communication and/or movement. This procedure provides guidance for the use of respiratory protection equipment under those conditions.

The Radiological Controls Coordinator is responsible to ensure the actions outlined in this procedure are implemented, when necessary. The Emergency Director is the only individual who may authorize dose extensions in excess of 10CFR20, and/or direct the issuance of thyroid prophylaxis to on-site emergency workers.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.

2. As a result of the emergency condition airborne radioactivity is observed, significant enough to warrant respiratory protection.

C. PRECAUTIONS

1. Precautions relative to the normal use of respiratory protection should be observed when respirators are worn during emergency conditions.

2. During emergency conditions, substantial respiratory hazards such as toxic gases, steam, flammable gases, and oxygen deficiency may likely be present concurrent with significant radioactivity. Respiratory protection should be assigned considering all of the hazards.

3. Respiratory protection equipment significantly impairs vision and communication. In an emergency a reduction in the ability to communicate readily and/or to view instrumentation, etc, may not be acceptable. For these reasons, respiratory protection for emergency workers and control room personnel should not be assigned unless the projected ingestion will

exceeds 40 MPC-hrs/week, based on the actual airborne radioactivity and the estimated duration of release (or area occupancy). However, airborne activity should be sampled/monitored during this period to detect any significant changes in levels. Appropriate bioassay should be performed as soon as possible following such exposure in accordance with EPP/IP-5.4, "Emergency Personnel Monitoring".

D. GUIDANCE AND CRITERIA

1. General

1.1 The Beaver Valley Power Station Radiation Control Manual (RCM) Appendix 6 contains provisions governing the use of respiratory protection equipment during emergency conditions except as specifically provided in this EPP/IP or in the BVPS Emergency Preparedness Plan.

1.2 Three exceptions to normal respiratory protection are addressed in this procedure. The first is the extension of normal uptake limits, the second is the use of thyroid prophylaxis, and the third is the use of iodine sorbant cannisters on filter respirators.

2. Extension of Normal Limits

2.1 Under normal operational conditions the inhalation of radioactive material is limited by regulation to 40 hours per week for 13 weeks at the MPCs values specified in Table 1, Column 1 of Appendix B to 10 CFR 20, or 520 MPC-hours. This corresponds to a whole body dose committment of 100 mrem/week or 1300 mrem/quarter. 10 CFR 20 also provides that appropriate process, engineering, operational controls be applied or respiratory protection equipment be used to maintain exposure to 40 MPC within a period of seven consecutive days.

2.2 During emergency conditions, higher uptakes may be authorized in a manner similar to that for increased external exposure (EPP/IP-3.4). In these cases, the allowed internal exposure must be such that the total dose committment -- internal and external exposure combined -- does not exceed that specified for external exposure in EPP/IP-3.4. It is infeasible to establish guidelines applicable to all conceivable scenarios, however, three guidelines are provided below. The Radiological Control Coordinator will establish exposure limits and assign respiratory protection equipment that are compatible with the safe and timely performance of protective/corrective actions, or life-saving measures. Exposure limits in excess of 10 CFR 20 must be authorized by the Emergency Director.

2.2.1 Although all exposures shall be maintained as low as reasonably achievable during an emergency, respirators should not be assigned to emergency workers or Control Room personnel if the use of respirators will have an adverse affect on the timely implementation of emergency measures and the projected exposure (for the observed activity and estimated time of exposure) is less than 40 MPC-hours/week.

2.2.2 If the projected exposure above exceeds 40 MPC-hours/week, consideration should be given to alternative respiratory protection measurer (such as thyroid prophylaxis without a respirator or use use of iodine sorbant cannisters), or to authorizing emergency exposures.

2.2.3 To the extent practicable, and consistent with prevailing conditions efforts to restore airborne activity levels to normal levels should be initiated as soon as possible.

2.3 Protection factors for respirators are provided in the RCM. However, the RCM provides that these protection factors are not applicable unless the individual has been fit-tested on the wearer. Under emergency conditions it is appropirate to allow a respirator to be worn, and to perform necessary fit-testing after use.

3. Thyroid Prophylaxis (Potassium Iodide)

3.1 General

The release of substantial quantities of radioiodines is postulated for nearly every accident scenario that involves significant offsite exposures.

These radioiodines pose a significant threat to the thyroid gland and will require protective action to minimize the thyroid exposure Stable iodine is a useful agent to block the uptake of radioactive iodine species. Potassium iodide has been approved by the Food and Drug Administration for this use.

Potassium iodide must be taken prior to exposure to radioiodine to be completely effective. Approximately 30 minutes are required for the onset of blocking following administration. A substantial benefit is obtainable, however, when the potassium iodine is administered within 3 to 4 hours following acute exposure to radioiodine. Limited benefits are obtainable up to 12 hours following exposure. The radioiodine which is not taken up by the thryoid will be eliminated from the body in about 48 hours, however, some recirculation is possible, so potassium iodide should be administered (about 130 mg/day) for 3 to 10 days following acute exposure.

This EPP/IP only applies to employees and contractors of Duquesne Light Company. Duquesne Light personnel shall not supply potassium iodide to members of the general public. Distribution of potassium iodide to members of the general public is a responsibility of the respective departments of health in West Virginia, Ohio, and/or Pennsylvania.

3.2 Criteria for Use

Potassium iodide has been approved as a protective measure for emergency use only. It shall be used at the Beaver Valley Power Station only under the following conditions, and at the direction of the Emergency Director.

3.2.1 In the absence of timely survey data, and if plant instrumentation indicates the possibility that an accident has occurred which has or will cause the release of significant quanitites of radioiodine, the Emergency Director, on the advice of the Radiological Controls Coordinator, may order the distribution of potassium iodide to DLC and contractor, emergency personnel assigned to the Beaver Valley Power Station.

3.2.2 When respiratory protection equipment does not provide adequate protection from I-131. For iodine-131, a SCBA (highest protection factor of respirators available) allows entry to areas with airborne radioactivity of 9 E-5 uCi/cc (I-131), without exceeding MPC limits. At radioactivity levels greater than 9 E-5 uCi/cc (I-131), the use of potassium iodide may be warranted for personnel required to remain in affected areas (monitoring teams, Emergency Squad personnel, security, etc).

3.2.3 There is no protection factor associated with the use of potassium iodide. Therefore, respirators and/or stay-time controls should continue to be used to maintain exposure to airborne activity (less noble gases) within designated limits.

3.2.4 Potassium iodide will be procured, stored, and administered to DLC and contractor emergency personnel assigned to the Beaver Valley Power Station in accordance with the directives of the Duquesne Light Company Medical Department.

3.2.5 Personnel who are to be administered potassium iodide shall be briefed on the use of the material. Attachment 1 contains instructional material on potassium iodide as a thyroid prophylactic.

3.3 Precautions

3.3.1 As administered per step 3.1, potassium iodide is a safe, effective pharmaceutical for relatively healthy individuals. (Even at the much larger therapeutic levels it is considered to have a small risk.) However, potassium iodide should not be used by individuals who know that they are allergic to iodine. If an allergic reaction occurs, medical assistance shall be obtained as soon as possible. Allergic reactions may include skin rashes, fever and joint pains, swelling of parts of the face and body, and/or severe shortness of breath. Potassium iodide should be administrated on a voluntary basis.

3.3.2 Potassium iodide has no effect for particulate radioactivity nor for noble gases. Appropriate protective measures must still be established for these types of airborne radioactivity. However, when practicable, a respirator should be used in conjunction with potassium iodide, unless it has been positively identified that the airborne radioactivity is exclusively radioiodine.

3.4 Post-Exposure Actions

Appropriate whole body counting should be performed on any individual who has been determined to have been exposed to 10 MPC-hours or greater within seven consecutive days while using potassium iodide. The protection factor assigned to any respirator used concurrent with the potassium iodide may be used in assessing the 10 MPC-hour uptake. If whole body counting indicates an uptake in excess of 70 nCi (10% MPBB for I-131), the individual should be restricted from further exposure pending evaluation by Radcon personnel.

4. Use of Iodine Sorbant Cannisters

4.1 General

NUREG-0041 and Regulatory Guide 8.15 do not provide a protection factor for iodine sorbant cannisters for routine use, because of difficulties ensuring continued protection. As a result, the only respirators which are suitable in iodine atmospheres are air supplied devices, such as SCBA and air hose masks. (NUREG-0041 prohibits the use of air hose masks in rescue operations.) However, in addition to airborne radicactivity, the areas in which the respirators are likely to be used may also be affected by high dose rates. Since mobility is reduced when wearing SCBAs, it may be more conducive to overall exposure reduction to use iodine sorbant cannisters in lieu of SCBAs. For these reasons, the Radiological Control Coordinator may direct that iodine sorbant cannisters be used in emergency conditions pursuent to the conditions in Step 4.2.

4.2 Conditions of Use

4.2.1 The filter cannisters authorized are the MSA GMR-1 charcoal cannister, or the Scott TEDA-impregnated charcoal cannister, as available.

4.2.2 The protection factor is 50 for iodine.

4.2.3 The respirator shall not be used in iodine atmospheres greater than 100 times the Table 1, Column 1, Appendix B to 10 CFR 20 value for the specific iodine nuclide. For iodine-131, this is 9 E-7 uCi/cc. (Assumes stay-time control.)

4.2.4 The stay-time in affected areas should not exceed 20 MPC-hours in any seven consecutive days. (This provides for additional subsequent exposure.)

4.2.5 Appropriate representative air sampling shall be performed.

4.2.6 Suitable MPC-hour records shall be kept in accordance with applicable Radcon procedures.

4.2.7 Personnel exposure to iodine atmospheres with iodine sorbant cannisters shall be monitored as follows:

- o Routine weekly whole body counting
- o Special whole body counting whenever 10 MPC-hours stay-time is recorded in any seven consecutive days.
- o If the results of the whole body counting above indicates an iodine uptake in excess of 70 nCi, that individual shall be restricted from further entry to iodine atmospheres pending evaluation by Radcon personnel.

4.2.8 Sorbant cannisters shall not be re-used. However, an individual may re-use the same cannister for multiple entries during a single shift, after which it will be replaced.

E. PROCEDURE

none

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures
2. Title 10, CFR Part 20
3. NUREG-0041, "Manual of Respiratory Protection Against Airborne Radioactive Materials"
4. DHEW, FDA, "Potassium Iodide as a Thyroid Blocking Agent in a Radiation Emergency", FR 43-58798, December 15, 1978.
5. Commonwealth of Pennsylvania Department of Health Radiation Emergency Response Plan, Appendix J, "Patient Information (on the) Use of Saturated Solution of Potassium Iodide (SSKI) for Thyroid Blocking".
6. NCRP Report No. 39, "Basic Radiation Protection Criteria"
7. Letter H-5 79-739 of May 16, 1979 from Mr. Alan Hack, LASL, Respirator Research and Development Section to Mr. John Collins, USNRC RE: Respiratory protection at TMI (includes discussion on LASL results on iodine sorbants).

G. ATTACHMENTS

1. Instructional Material on Potassium Iodide.

INSTRUCTIONAL MATERIAL

on the

USE OF POTASSIUM IODIDE

General

Many of the accident scenarios analyzed in the Beaver Valley Power Station Final Safety Analysis Report postulate the sudden release of large quantities of radionuclides, which might include a large number of isotopes of radionuclides, into the environment and into plant areas.

When iodines, including radioactive and non-radioactive, are inhaled or ingested, they rapidly accumulate in the thyroid gland. Radioiodines could reside in the thyroid gland long enough to allow localized radiation damage.

In order to minimize the dose to the thyroid, some protective action must be taken to minimize uptake or to minimize the effects of this uptake. Saturating the thyroid with stable (or non-radioactive) iodine will "Block" the thyroid, preventing the uptake of additional iodine. Iodine ingested or inhaled, but not absorbed by the thyroid will be eliminated from the body in about 48 hours by normal bodily processes. Thus, if stable iodine is administered prior to or immediately after (less than 2 hours) exposure to radioiodine, the radioiodine will not be taken up, but rather, will be eliminated from the body.

Although a variety of chemical substances can block the accumulation of radioiodine in the thyroid gland, potassium iodide appears to be the most suitable:

- The blocking is essentially complete with a dosage of 100 mg iodide (130 potassium iodide).
- The onset of blocking occurs at about 30 minutes following administration.
- The decay of the blocking effect is relatively slow.
- The potential for side effects is very low at the dosages involved.

To be completely effective, the potassium iodide should be taken prior to exposure to radioiodine, or very shortly thereafter. Approximately 50% blocking will occur if the iodide is administered within 3 to 4 hours after exposure. Limited benefits are possible up to 12 hours following acute exposure.

Because of the potential for recirculation in the body, potassium iodide should be taken for 3 to 10 days following exposure to minimize the uptake of recirculated radioiodine.

Side Effects

Potassium iodide has been used widely for several years in the treatment of bronchial asthma. Daily oral doses of potassium iodide ranging from 300 to 1200 mg have been administered to patients over a long time. Only the repeated administration of daily doses far in excess of those necessary for thyroid blocking have resulted in significant side effects.

Although side effects are unlikely because of the small dose and short period time that the drug would be used for thyroid blocking, effects noted have been:

- The taking of iodide has been associated with skin rashes, swelling of the salivary glands, and iodism (burning in the throat and mouth, metallic taste, soreness of mouth and gums, symptoms of a head cold, and diarrhea). Also, allergic reactions may produce symptoms such as fever and pains in the joints, or on rare occasions swelling of various parts of the body with severe shortness of breath.
- Overactivity or underactivity of the thyroid gland and/or goiter. Symptoms of thyroid overactivity include nervousness, sweating, and rapid heartbeat.

If side effects are noted, report to your supervisor for possible transfer to a hospital or consultation with a physician. Discontinue use of the potassium iodide. If the heartbeat is rapid and irregular, or if shortness of breath (associated with the iodide) is noted, seek medical attention immediately.

Usage

The only people who should not take potassium iodide are people who know that they are allergic to iodide. (Note: table salt is commonly iodized). You may take

Potassium iodide even if you are taking medication for a thryoid problem. Pregnant and nursing women and children may take the drug.

Potassium iodide should be taken as soon as possible after you are directed. You will probably be directed to take on dosage every 24-hours for no more than 10 days. Do not take larger doses. Larger doses do not increase the radioiodine protection, but may increase the chance of side effects.

Potassium iodide for emergency use will probably be provided in 130 mg tablets (corresponds to 100 mg iodide), but liquid solutions to be added to a glass of water may be used.

References

1. DHEW/FDA Federal Register Note FR-43 No. 232 December 15, 1978 "Potassium Iodide as a Thryoid Blocking Agent in a Radiation Emergency".

2. Commonwealth of Pennsylvania Department of Health Radiation Emergency Response Plan, Appendix J "Patient Information (on the) Use of Saturated Solution of Potassium Iodide (SSKI) for Thyroid Blocking".

3. Patient Package Insert for Thyro-Block, Wallace Laboratories.

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TRAFFIC AND ACCESS CONTROL

A. OBJECTIVE

In the event of an emergency involving the release of radioactivity, it may become necessary to evacuate the Beaver Valley Power Station exclusion area and to establish access and traffic control to prevent unauthroized re-entry. The BVPS exclusion area includes areas, outside of the site boundary, which may be occupied by members of the general public. This procedure provides instructions for maintaining emergency access control on these areas.

B. PREREQUISITES/INITIAL CONDITIONS

An emergency condition at the Beaver Valley Power Station has resulted in radiation levels within the exclusion area which warrant evacuation.

C. PRECAUTIONS

1. The Rt. 168 Ohio River bridge is a major connector between the west and east banks of the Ohio River, and may be used by emergency vehicles, and possibly by members of the population during evacuations. The Beaver County emergency plan does not designate the bridge as an evacuation route. However, it may become necessary to do so. The Emergency Director should coordinate with the Beaver County Emergency Management Agency in establishing access control on this bridge.
2. Security personnel maintaining access control as provided by this procedure shall have appropriate dosimetry, protective clothing, and respirators.

D. GUIDANCE AND CRITERIA

1. The Beaver County Emergency Management Agency is responsible to provide for access control (roadblocks, etc) to restrict the access of members of the public to affected areas offsite. This agency will deploy appropriate forces to establish the access control. However, access control offsite is not likely to begin until after a large portion of the population of affected areas has been relocated to mass care facilities.

2. The exclusion area at the Beaver Valley Power Station is 2000 feet in radius from the center of the BVPS-1 reactor containment. This area includes portions of route 168 SE from the site; Rt. 168 and bridge NE from site; Phillis Island; and the Ohio River. In an emergency with offsite consequences, unauthorized and unessential individuals must be kept outside of the exclusion area. Establishing access control will initially be the responsibility of the Emergency Director. Following the initial period, the State and County forces will assume responsibility for access control on affected areas outside of the site fence.

3. County officials primarily establish raodblocks for the security of evacuated areas, but could establish roadblocks to control traffic flows during evacuations. To minimize possible difficulties, all BVPS personnel shall ensure that they are carrying their DLC identificaiton card offsite, or other suitable identification that will identify them as Station employees, such as the yellow BVPS "Emergency Representative" card.

4. State officials are responsible for the control of contamiation offsite. The personnel of those agencies participating in the emergency response will establish monitoring and decontamination stations offsite, if warranted.

E. PROCEDURE

In the event of an emergency which requires evacuation of the Station exclusion area (Site or General emergency), the Emergency Director will proceed as follows:

1. Notify the Beaver County Emergency Management Agency (BCEMA) of the situation and the need for access control, if not already done.

NOTE

Notification specified in this procedure may be made as part of notifications required by other implementing procedures. The notificaitons need not be repeated.

2. Dispatch security personnel to the Rt 168 Bridge, west end; the east intersection of the bridge/Rt. 168; to Rt. 168 south of the Station at the second transmission line crossing; and to the site access road, to establish access control. See Attachment 1.

3. Security personnel will restrict access via these routes to individuals (and vehicles) from the following organizations. Personal identification cards, uniforms, vehicle markings, letters of access, or other similar means may be used for identification.

   3.1 Duquesne Light Company employees
   3.2 Beaver County Emergency Management Agency (BCEMA)
   3.3 Pennsylvania Emergency Management Agency (PEMA)
   3.4 West Virginia Office of Emergency Services
   3.5 Ohio Disaster Services Agency
   3.6 Nuclear Reulatory Commission (NRC)
   3.7 Federal Emergency Management Agency (FEMA) and supporting Federal agencies
   3.8 Fire, Police Ambulances
   3.9 INPO, CAPCO
   4.0 Others, as approved by TSC/EOF.

4. Security personnel will restrict access to the site to only those individuals specifically approved by the TSC. This approval may be in the form of an access list (longer term) or obtained by telephone/radio from the TSC (short term). Traffic Access Control will be established atathe Main Gate Entrance to BVPS. Press Personnel will be directed to the off-site media location at the Willows Motel, Industry, PA.

5. Notify the following organizations (one person from each):

Pennsylvania and Lake Erie R.R.	Dispatcher	261-0650
	Aliquippa Yardmaster	375-5507
Conrail	Division Superintendent	1-928-7206
	Assistant Superintendent	471-6000 x2855
	Supervisor Train Operations	471-6000 x 702

   5.1 Identify yourself by name, job title, employer (DLC), and work location (BVPS).

   5.2 State that there has been an accidental release of radioactivity, giving the approximate time and date and that the Beaver Valley Power Station Emergency Preparedness Plan has been implemented.

   5.3 Request the following:

      5.3.1 Railroad traffic approaching the exclusion area be halted or redirected.

5.3.2 Railroad traffic that passed through any affected area during the release be removed from service as soon as posisble for monitoring by PEMA personnel.

5.3.3 A call back to verify validity of emergency notificaiton.

6. Notify the following (all) to establish Ohio River Traffic control:

US Coast Guard, Captain of Port, Pittsburgh	644-5808
US Army Corps of Engineers--Lockmaster	800-424-8802
Montgomery Locks (upstream)	643-8400
New Cumberland Dam (downstream)	(614) 537-2571

6.1 Identify yourself by name, job title, employer (DLC), and work location (BVPS).

6.2 State that there has been an accidental release of radioactivity, giving approximate time and date, and that the Beaver Valley Power Station Emergency Preparedness Plan has been implemented.

6.3 Request the following:

6.3.1 That the Coast Guard and the US Corps of Engineers establish a "security zone" encompassing the pool between the New Cumberland Dam and the Montgomery Dam. (larger if necessary)

6.3.2 That the Coast Guard utilize all available radio communications to alert and advise all river traffic.

6.3.3 That the Coast Guard advise the Dravo dredge (if present at Phillis Island) to evacuate.

6.3.4 That the US Army Corps of Engineers detain all river traffic that passed through the affected areas during the release for monitoring by Federal or State personnel.

6.3.5 A call back to verify the validity of the notification.

7. Dispatch security personnel to observe Phillis Island for occupancy, if not already completed.

8. Continue access control until such time as State/County agencies assume responsibility, or until no longer warranted.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures

2. State and local emergency preparedness plans/procedures

3. Title 10 CFR Parts 20 and 50

4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

G. ATTACHMENTS

1. BVPS Exclusion Area

2. Emergency Planning Zone Roadblocks (To be provided)

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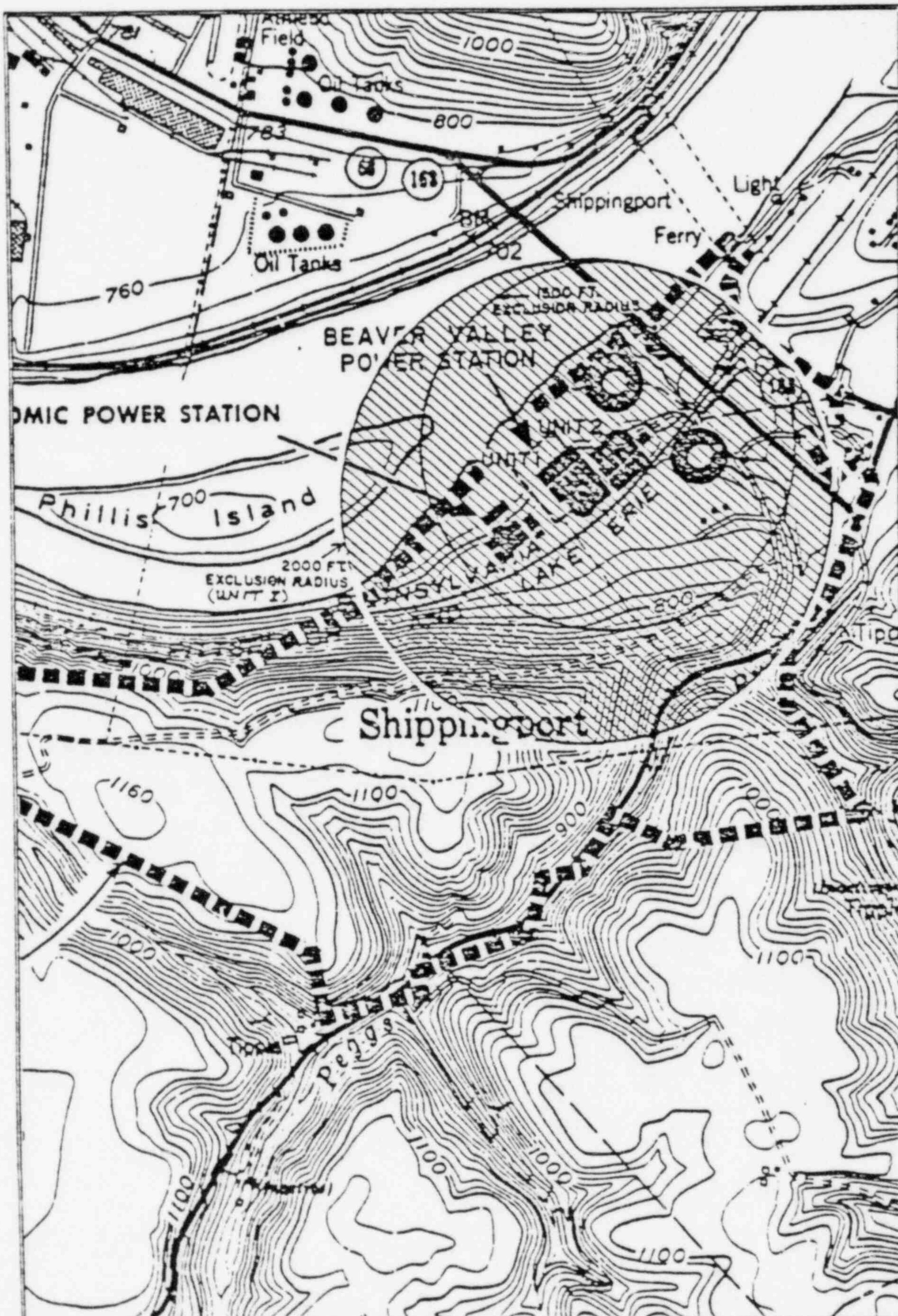
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OFFSITE PROTECTIVE ACTIONS

A. OBJECTIVE

This procedure provides guidance to the Emergency Director for the recommending of offsite protective actions to local emergency services groups. The Beaver Valley Power Station is required to make recommendations for protective actions as part of the initial notification process if the nature and magnitude of the actual or potential radioactivity release warrantes protective actions for the general public.

The Emergency Director/Emergency Recovery Manager is the only individual who is authorized to recommend Off-site protective actions on behalf of DLC.

Upon activation of the Emergency Operations Facility, this responsibility and authority transfers to the Emergency/Recovery Manager.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.
2. Initial assessment activities have been performed and a dose projection made. This dose projection indicates the need for offsite protective actions.

C. PRECAUTIONS

1. The emergency plans of the jurisdictions within the BVPS emergency planning zone provide that the local emergency services director will call upon the respective state for recommendations of protective actions, and/or for approval of the recommendation made by BVPS. However, each of these plans provide that the local emergency services director can implement protective actions based on the BVPS recommendation, if time does not permit contacting the state. For this reason, the Emergency Director must ensure that the dose projection results and the protective action recommendations based on those results are accurate and appropriate for the existing circumstances.

D. GUIDANCE AND CRITERIA

1. Protective Action Guides

Protective actions are measures taken to avoid or reduce the projected dose when the benefits derived from such action are sufficient to offset any undesireable features of the protective actions. The guidance below is receptive to the provisions of the USEPA Manual of Protective Actions Guides and Protective Actions for Nuclear Incidents, and is compatible with the emergency plans of Ohio, Pennsylvania, and West Virginia.

The protective actions in this procedure are limited to protective actions for minimizing the exposure of the public to external and internal radiation exposure from passage or inhalation of the radioactive plume; and from internal exposure from drinking water. Other protective actions from minimizing public exposure via the ingestion pathway will be determined and implemented by the appropriate state authorities.

1.1 No protective action should be recommended for incidents involving actual or potential radioactivity releases which are projected to result in projected whole body or thyroid doses less than about 170 mrem to members of the general public.

1.2 Sheltering of members of the general public within affected areas should be recommended for incidents involving actual or potential radioactivity releases which are projected to result in whole body or thyroid doses greater than 170 mrem, but less than 1 rem whole body/25 rem thyroid (child).

1.3 Protective actions, such as sheltering or evacuation, are mandatory in affected areas if projected offsite doses exceed the following protective action guides (PAGs):

1.3.1 Whole Body external dose from radioactive plume - 1 rem

1.3.2 Thyroid dose (child) due to inhalation of I-131 in plume - 25 rem

1.4 Recommendations shall be made to downstream water treatment plants to secure taking water from the Ohio River for liquid releases projected to exceed the concentration of radionuclide that will cause an exposure of 48 mrem. This is equivalent to 12 times the EPA Primary Drinking Water

Standards as measured at the water treatment plant discharge (to the public distribution system). This is determined in accordance with EPP/IP-2.7, "Liquid Release Estimate".

2. Protective Action Options

2.1 Sheltering

Sheltering is a protective action which involves members of the general public taking cover in a building that can be made relatively air tight. Although sheltering, particularly in masonry buildings, will also reduce the exposure of personnel to external radiation as the plume passes, this effect is less signficiant that the corresponding reduction in internal exposure. Generally, any building suitable for winter habitation, with windows and doors closed and ventilation turned off, would provide reasonably good protection for about two hours; but would be ineffective after that period due to natural ventilation of the structure. Sheltering is an appropriate protective action for:

2.1.1 Severe incidents in which an evacuation cannot be implemented because of inadequate lead time due to the rapid passage of the plume ("puff" release).

2.1.2 When an evacuation is indicated, but local constraints, such as inclement weather, road conditions, etc; dictate that directing the public to seek shelter is a more feasible and effective protective measure than evacuation.

2.1.3 As a precautionary measure, while a determination of the need to evacuate is made.

2.2 Evacuation

Timely evacuation of members of the population is the most effective protective action. There are, however, disadvantages and constraints that may make evacuation inappropriate. An estimate of the time necessary to effect an evacuation of the entire BVPS emergency planning zone (10 mile radius) is approximately 3-1/2 hours following notification of county officials. However, this time estimate is expected to increase by 40% in inclement weather. Evacuation is an appropriate protective action for:

2.2.1 An incident involving a release, or potential release, which is projected to result in an offsite dose greater than 1 rem whole Body, and/or 25 rem to the child thyroid, in situations where the lead time between declaration of the emergency and population relocation is compatible with plume movement.

2.2.2 Situations which do not provide for advance warning, but for which substantial reductions in population dose can be made by avoiding exposure to residual radioactivity (plume fallout) in the wake of sudden severe incidents.

NOTE

An individual standing on earth contaminated to 8 E7 dpm/100 cm^2 (3.6 E7 pCi/100 cm^2) would receive an exposure of approximately 62 mrem/hr. In eight hours, this would be equivalent to a dose of 500 mrem or 10% of the USEPA protective action guide. Evacuation should be considered under this condition.

2.3 Thyroid Prophlaxis

The effect of thyroid prophylactics, normally potassium iodine (KI), is to saturate the thyroid with stable iodine and significantly reduce the probability of thryoid uptake of radioiodine. Since some individuals may have allergic reactions to KI, it is administered only under medical surveillance. For this reason, thyroid prophylaxis will not be recommended by BVPS personnel.

3. Identificaiton of Affected Areas

The designation of the area requiring protective actions will depend on several variables, each of which will have to be evaluated at the time of the incident. Major variables include the nature and extent of the incident, local georgrahy, and existing meteorological conditions. Generally, the affected area will resemble a keyhole consisting of a circle with a 90° (or larger) wedge shaped sector attached in the downwind direction.

Because of the complex terrain surrounding the Beaver Valley Power Station, it is not possible to determine the plume trajectory from the station meteorological instrumentation, and this creates uncertainty in the identification of the affected area. Until such time as additional meteorological instrumentation can be implemented, it will be necessary to apply conservative compensatory factors to the observed site wind conditions. Attachment 2 provides guidance in establishing the affected area.

As a result of the uncertainty, three general evacuation bands are to be considered. The first is a two-mile radius circle surrounding the station. If any offsite protective action is necessary, this initial two-mile band will be included in the recommended area in which protective actions are to be implemented. The second band is the area between 2 miles and 5 miles and may be as little as a 90° wedge or a complete circle. The third band is the area between 5 miles and 10 miles, and as before may range from 90° to a complete circle. If the calculated dose at 2 miles or at 5 miles indicates the need for offsite protective actions, appropriate recommendations will be made for these areas. In either case, the width of the wedge is determined with Attachment 2.

Affected areas will be defined by BVPS personnel on the basis of circles of various diameters, and if wind patterns permit, particular sectors beyond the initial circle. County and state authorities have been provided with maps having sector designations identical to those on maps in use at the Station. Although the Station will use radius and/or sectors to recommend protective actions, local authorities will implement the protective action in areas defined by geographical boundaries (rivers, highways), or political boundaries (townships, boroughs, etc) which coincide with or encompass the actual affected area.

E. PROCEDURE

1. Obtain projected dose data in accordance with EPP/IP-2.6.1 "Dose Projection--Short Form" or, EPP/IP-2.6 "Dose Projection" and supporting procedures. Permit this dose projection on the basis of monitor readings, or other indications within the Control Room whenever possible. Do not delay recommending protective actions to wait for offsite monitoring team results. Calculate a projected dose for the site boundary (EAB) first, and other distances as necessary.

2. Determine from meteorgolocial information the plume direction and wind speed. Evaluate the potential for wind shifting..

3. Assess plant parameters to identify how long the release will continue; or if the release has not started yet, how long until the release does start and how long it will continue.

4. With the data from steps 1, 2, and 3, enter Figure 1 (Attachment 1) and determine the appropriate protective action. Determine the affected area in accordance with the general guidance of Section D.3 and the instructions in Attachment 2.

5. Document this protective action on the appropriate initial notification form or follow-up notification form, and make the recommendation to the appropriate offsite authorities in accordance with EPP/IP-1.1, "Notificaiton", and the following:

   5.1 Identify the affected areas by a radius. For example "evacuation within a five mile radius, sheltering beyond five miles".

   5.2 Use individual sector letters from Attachment 2. For example: "Evacuation within a two mile radius in the M, N, P, Q sectors to five miles, sheltering in those sectors to ten mile radius".

6. For liquid releases corresponding to an Alert emergency, notify the Midland Water Treatment Plant and recommend teh plant stop taking water from the Ohio River until notified by the DER/BRP. If sampling at Midland indicates activity in excess of EPA limits, sampling should be performed at East Liverpool, and an appropriate recommendation made for that plant. The Ohio EPA will determine when the East Liverpool can resume taking water from the Ohio River.

7. If as a result of continuing assessment, dose projection results change significantly, or if meteorological conditions change signfiicantly, re-evaluate the recommended protective action and if necessary, update the initial recommendation appropriately.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Emergency Implementing Procedures

2. USEPA 520/1-75-001 (and subsequent revisions) "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents"

3. USEPA 570/9-76-003 "National Interim Primary Drinking Water Regualtions"

4. County and State Emergency Plans, particularly:

   DER/BRP "Plan for Nuclear Power Generating Station Incidents"

5. Title 10 Code of Federal Regulations Part 50 Appendix E

6. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

G. ATTACHMENTS

1. Protective Action Decision Chart.

2. Sector Identification Aid.

Duquesne Light

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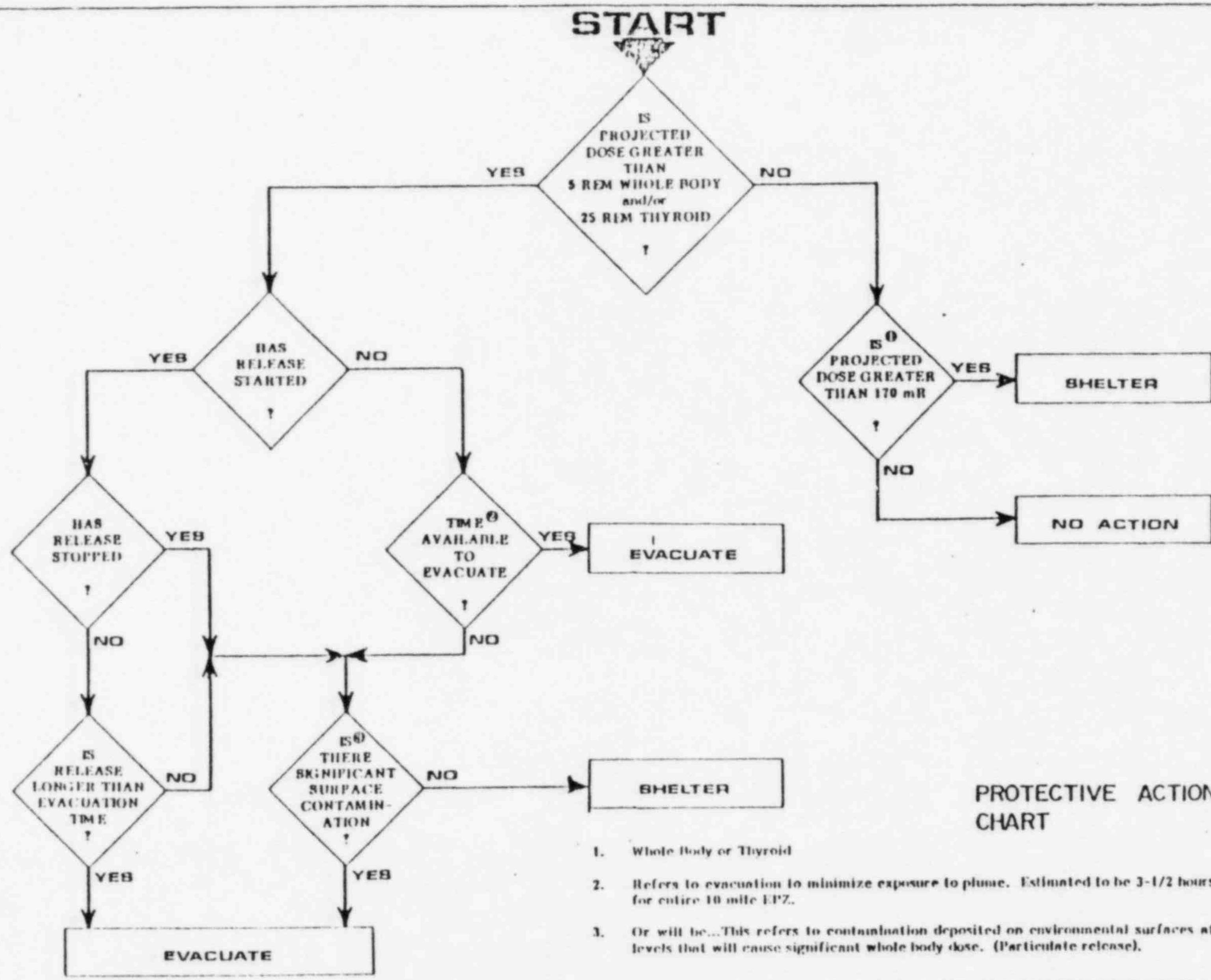
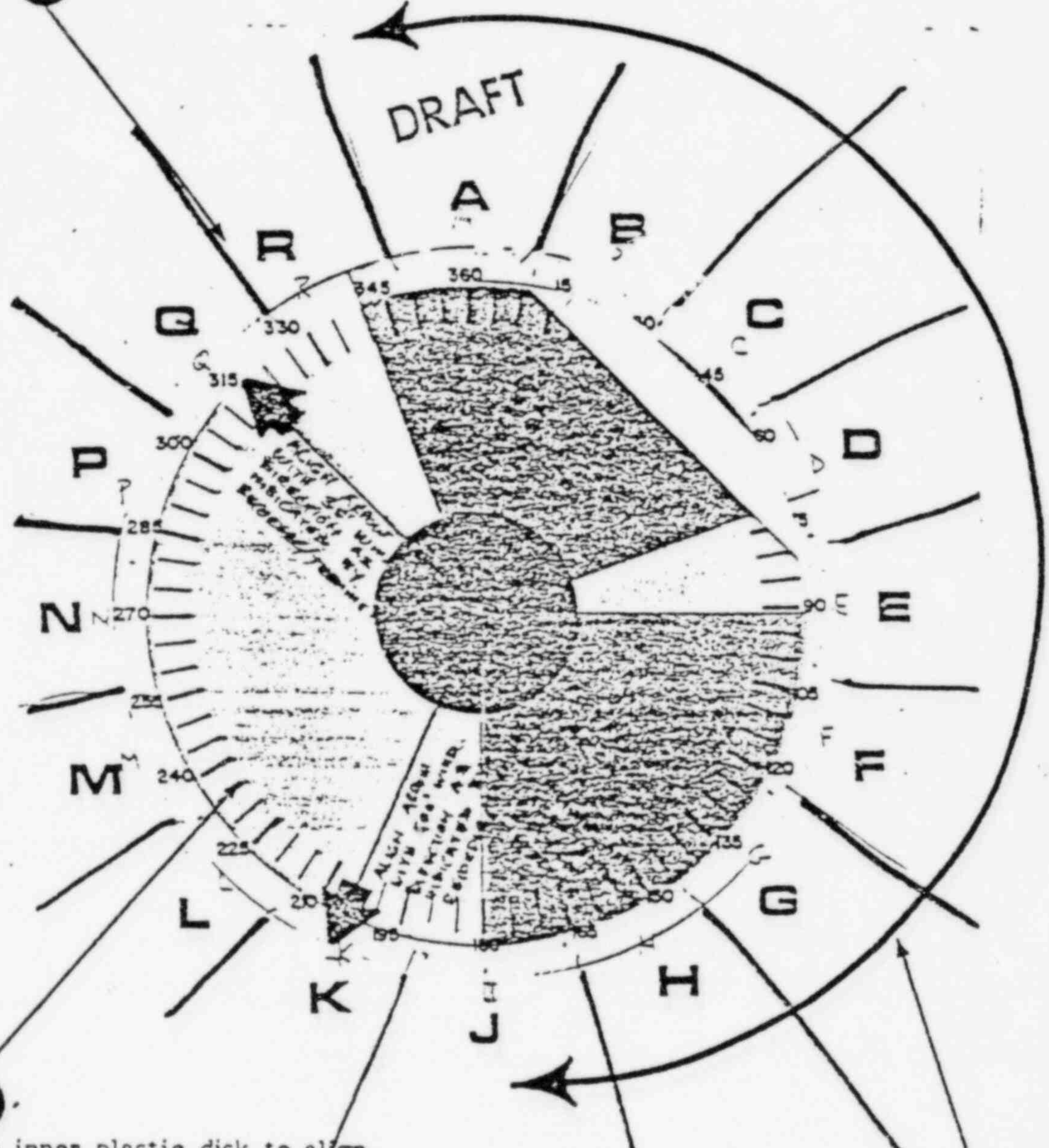


PROTECTIVE ACTION DECISION CHART

1. Whole Body or Thyroid
2. Refers to evacuation to minimize exposure to plume. Estimated to be 3-1/2 hours for entire 10 mile EPZ.
3. Or will be...This refers to contamination deposited on environmental surfaces at levels that will cause significant whole body dose. (Particulate release).

Rotate outer plastic disk to align arrow with 500' wind direction as indicated on met. instruments. (Direction from which wind is coming)

1



Rotate inner plastic disk to align arrow with 35' wind direction as indicated on met. instruments (direction from which wind is coming)

3

Identify affected sectors. In this example: A through J. If the difference between the 35' and 500' wind directions exceeds 180°, all sectors should be included in the recommendation. If the outer edge of the wedge bisects a sector, include the entire sector in the recommendation.

4 Always include 2 mile circle surrounding the station.

SEARCH AND RESCUE

A. OBJECTIVE

This procedure provides instructions for search and rescue measures necessary to locate personnel who are unaccounted for following an evacuation. The Emergency Director is responsible to ensure the actions outlines in this procedure are implemented, when necessary.

B. PREREQUISITES/INITIAL CONDITIONS

1. One or more individuals are missing following an evacuation of an affected area, as discovered during personnel accountability efforts.
2. A report has been received of an individual trapped or disable within the Station.

C. PRECAUTIONS

None

D. GUIDANCE AND CRITERIA

1. Rescue Priorities

1.1 If an individual is trapped or disabled in a high radiation area, the rescue must be performed as expediously as possible to minimize the dose to the victim and the doses to the rescue personnel, and to ensure that first aid can be provided as soon as possible.

1.1.1 In an emergency situation, an exposure of 100 rem to rescue and first aid personnel is appropriate if necessary to save a life. Refer to EPP/IP-5.3, "Emergency Radiation Exposure Cirteria and Control".

1.1.2 If the situation is not one of life or death, but requires action to minimize the further excessive exposure of the victim, rescue personnel may be allowed to receive doses up to 25 rem. See EPP/IP-5.3.

1.1.3 If the situation is other than that described in Step 1.1.1 and/or 1.1.2, normal Station administrative radiation exposure guide and regulatory exposure limits apply.

1.2 Rescue of a victim shall take precedence over fire-fighting efforts, unless the fire must be suppressed to effect rescue, or if the fire poses an immediate threat to the lives of others.

1.3 Rescue of a victim shall take precedence over isolation of high energy fluids (Steam, hot water under pressure, hydraulic fluids, etc.) unless isolation of the system is necessary to effect rescue; or if failure to isolate the system will seriously affect reactor safety or will place the lives of other personnel in immediate danger.

E. PROCEDURE

1. Initial Response

1.1 As soon as it is recognized that one or more individuals are missing, the security supervisor (other supervisors) at the assembly area shall attempt to determine the possible location of the missing individuals, by paging the individual, by conferring with the individual's supervisors and co-workers, via brief searches of the last known location (if possible), and/or calling the individual's home. If following these efforts, the individual is still unaccounted for, the Security Coordiantor shall be notified and the following information provided:

1.1.1 Name(s) of individual(s) missing

1.1.2 Summary of efforts performed to locate the individual(s)

1.1.3 Last known location of the individual

1.2 Individuals discovering an individual needing rescue and other medical assistance shall:

1.2.1 Effect immediate rescue in accordance with the provisions of this procedure, if required and if within the capabilities of the individual finding the victim.

1.2.2 Report the discovery to the Control Room/TSC/EOF and provides the following information:

- Location of victim
- Extent of injuries
- Assistance required
- Complications affecting rescue

1.3 Upon receipt of a report identified above, the Shift Supervisor (Emergency Director) will proceed as follows:

1.3.1 Have the Standby Alarm sounded three (3) times.

1.3.2 Announce over the page system:

"Attention, all Station personnel, the following individual(s) ___(name individual(s)___ is missing within the Station. Personnel knowing the whereabouts of this individual(s), please contact the Control Room/TSC/EOF" (Give PAX Extension)

OR

Attention, all Station personnel, an individual(s) is missing/trapped/disabled within ___(Specify location)___. Emergency Squad personnel assemble on the Main Turbine Floor near the Control Room."

Repeat the announcement once.

1.3.3 The Emergency Squad Chief will contact the Control Room/TSC/EOF and be briefed on the situation, if not already done.

1.3.4 The Emergency Squad Chief will direct the Emergency Squad in the search and rescue operation. The squad may be sub-divided or augmented as necessary.

1.3.5 If necessary, the Emergency Squad Chief will determine the search pattern, identify necessary equipment, and direct the search and rescue effort, based on the information received.

1.4 Upon receipt of a report on the location of the missing individual, contact the Emergency Squad Chief via the page system and direct him to the scene.

1.5 Upon arrival at the scene the Emergency Squad Chief shall enter the area and assess the situation, if conditions permit.

1.6 On the basis of this inspection, the Emergency Squad Chief will determine the course of action and direct the Emergency Squad in completion of the rescue, and/or request additional support from the Control Room/TSC/EOF.

1.7 If a rescue cannot be immediately carried out, first aid should be applied in the affected area, if necessary.

2. Follow-up Actions

2.1 Remove the victim to the closest safe area and apply any required first aid.

2.2 Evaluate the condition of the victim and take appropriate actions:

2.2.1 If the individual is injured and requires offsite medical treatment, perform actions in accordance with the Operating Manual Chapter 56A, Injury and Casualty Control.

2.2.2 If the individual is injured and contaminated, or has received a significant overexposure, perform actions in accordance with EPP/IP-5.2, "Handling Contaminated/Irradiated Personnel Injuries".

2.3 Emergency Squad personnel who received emergency exposures shall report to Radcon Supervision for exposure evaluation and follow-up.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures

2. Beaver Valley Power Station Operating Manual

3. Titel 10 CFR Parts 20 and 50

4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

G. ATTACHMENTS

None

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HANDLING OF CONTAMINATED/IRRADIATED PERSONNEL INJURIES

A. OBJECTIVE

This procedure provides instructions for the handling of personnel injuries, compounded by contamination of the injured individual, or the handling of personnel known or suspected to have received whole body radiation exposures in excess of 10 rem.

This procedure does not address personnel injuries which do not involve radioactive contamination, nor does it address personnel overexposures in excess of administrative guides or regulatory limits, but less than 10 rem. Refer to the Operating Manual Chapter 56A, "Injury and Casualty" for non-contaminated injuries or the Radiation Control Manual for personnel overexposures less than 10 rem.

The occurrence of personnel injuries compounded by contamination or overexposure, which result in transferring victims to an offsite location for treatment constitutes an Unusual Event emergency. The provisions of this procedure should be performed simultaneously with that of EPP/IPI-2, "Unusual Event".
The Emergency Director is responsible to ensure actions outlined in this procedure are implemented.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition at the Beaver Valley Power Station has resulted in personnel injuries compounded by contamination, or in personnel overexposures.

C. PRECAUTIONS

1. Whenever feasible, injured personnel should be decontaminated prior to leaving the Station in order to minimize contamination of ambulances and/or hospital equipment/personnel. Such decontamination shall not take precedence over necessary immediate first aid treatment such as stopping bleeding, resuscitation, etc.

2. Duquesne Light Company Radcon technicians are responsible for controlling contamination of ambulances or hospitals, performing necessary decontamination, and taking custody of contaminated waste. These activities are to be performed at the direction or with the permission of the attending physician. In performing responsibilities assigned above, the Radcon technician may make recommendations for contamiation control, if warranted, and in such a manner as not to interfer with the hospital staff in their treatment of emergency patients.

3. Emergency Squad personnel must remain alert to their own exposure when performing first aid in affected areas. Emergency exposure limits for life-saving activities are provided in EPP/IP-5.3 "Emergency Radiation Exposure Criteria and Control".

D. GUIDANCE AND CRITERIA

1. Assistance for Injured, Contaminated Personnel

1.1 At least two persons who are qualified in first aid shall be onsite at all times. First aid to injured personnel can normally be performed in conjunction with any decontamination methods. If immediate treatment of the injury is vital, that treatment shall take precedence over decontamination efforts. First aid kits are available for use at several locations throughout the Station and are carried by the Emergency Squad in responding to any emergency (unless priority deems otherwise).

1.2 Arrangments have been made with two ambulance services for the transportation of non-ambulatory contaminated injured personnel from the site to hospitals. Call to hospital is initiated from the Control Room with appropriate information.

1.2.1	Medic Rescue Ambulance Service (Midland)	775-0880 or 728-362
1.2.2	Community Ambulance (Aliquippa)	1-378-4438

For injured/contaminated individuals who are ambulatory, a DLC company vehicle or a personal vehicle may be used to transport the injured individual to the hospital in lieu of an ambulance.

1.3 Arrangements have been made with three area hospitals for the treatment of contaminated/injured personnel and/or severly overexposed personnel. These hospitals are:

1.3.1 Aliquippa Hospital Emergency Room 1-857-1255

The Aliquippa Hospital is the primary facility to which personnel will be transferred for injuries compounded by radioactive contamination, in which the radioactive contamination or radiation exposure is not the primary medical concern. (For example, a bone fracture with skin contamination.)

1.3.2 Medical Center of Beaver County Emergency Room 728-7110 or 1416

The Medical Center of Beaver County is designated as a back-up to the Aliquippa Hospital in the event that the transfer of contaminated injured personnel would exceed the capabilities of the Aliquippa Hospital facilities.

1.3.3	Presbyterian-University Hospital	Emergency Room	1-647-3333
		Radiation Medicine Dept.	1-647-3597

Arrangements have been made with the Radiation Emergency Response Program (RERP) for medical services beyond that which are available at the Aliquippa Hospital. The RERP Program uses the facilities of Department of Radiation Health and the Presbyterian-University Hospital of the University of Pittsburgh. This facility should be used only for those injuries in which the radiation exposure or radioactive contamination represents the major health hazard. These occurrences include significant personnel overexposures, or the uptake of significant quantities of radioactive materials.

1.4 Arrangements have been made for medical consultation for radiation injuries. These services may be available onsite, in the event as individual cannot be moved for offsite treatment. The following two physicians have agreed to provide consultation as necessary. In addition, the RERP program could be requested to provide onsite services if necessary, in accordance with the RERP Plan.

1.4.1	Dr. Neil Wald	1-647-3495/683-0779
1.4.2	Dr. Albert Spritzer	1-372-3590/372-3593

E. PROCEDURE

1. Contaminated Injury First Aid and Preparation for Transfer to Hospital

1.1 Upon discovery of injured personnel, sound the Standby Alarm and direct the Emergency Squad to the scene.

1.2 If the injury has occurred in a controlled area, direct the Emergency Squad to report to the Health Physics Check Area and don appropriate protective clothing and respirators, if such action is consistent with the need for rapid first aid treatment.

1.3 The Emergency Squad Chief will determine the extent of injuries, and with the assistance of Radcon personnel (if available) evaluate the contamination levels and/or potential for overexposure. The Emergency Squad Chief shall apprise the Emergency Director of the situation and request whatever assistance is required.

1.4 The Emergency Squad will perform appropriate first aid measures to stop bleeding, restore breathing, and/or to prepare the victim for transportation.

1.5 The Control Room, upon the advice of the Emergency Squad Chief shall request an ambulance, using the Beaver County Communications Center (775-0880).

1.6 The Control Room shall notify the Aliquippa Hospital to determine their availablity. If the Aliquippa Hospital cannot receive the contaminated injured victim, contact the Medical Center of

Beaver County. Provide the contacted hospital with the following information:

1.6.1 Number of injured victims to be transported
1.6.2 Extent of radioactive contamination
1.6.3 Extent and nature of injury
1.6.4 Type of First Aid provided
1.6.5 Estimated time of arrival at the hospital and method of transport
1.6.6 Victim ambulatory or non-ambulatory.

NOTE

If the Emergency Squad Chief determines that the injury involves significant overexposure of uptake of radioactive material, the victim should be transferred to the Presbyterian-University Hospital for treatment. Refer to Step E.3 of this EPP/IP.

1.7 If the victim cannot be moved due to the extent of his/her injuries, summon medical assistance to the Station. Refer to Step D.1.4 of This EPP/IP.

1.8 The NSS is to direct Control Room personnel to notify the security guards of the imminent arrival of ambulance(s) (or physicians) and direct the security guards to provide escort for the ambulance crew(s). The ambulance should be brought via gate 10 to the Turbine Building Door closest to the First Aid Room or via Gate 4-warehouse, as appropriate. Radcon shall also be notified by Security to provide dosimetry for the ambulance crew(s).

1.9 If the victim can be moved, direct the Emergency Squad to prepare and transfer the victim to the First Aid Room (Turbine Building 735' near elevator. The key to the First Aid Room is in the custody of the Emergency Squad.

1.10 If appropriate, prepare the Contaminated Injury Patient Carrier, and transfer the victim to the carrier.

1.11 If time permits, have the victim monitored for contamination and perform decontamination prior to transfer.

1.12 As time permits, direct Radcon personnel to make suitable arrangements to minimize the contamination of the ambulance by laying down blotting paper and plastic sheeting. This material should be removed from the ambulance only by BVPS personnel.

1.13 Direct a DLC supervisor and a Radcon technician to accompany the injured individual to the hospital. The Radcon technician shall be directed to carry an E140 w/ HP210 or equivalent radiation monitoring instrument for monitoring victim, ambulance, and/or hospital contamination. (A DLC supervisor qualified in Radcon may be substituted for a supervisor and a Radcon technician.)

1.14 If the injury is of a serious nature that the next of kin or immediate family is required to be notified, the on-duty NSS will make the notification upon concurrance of the Station Superintendent.

2. Supplementary Actions for Aliquippa Hospital or Medical Center of Beaver County

The Aliquippa Hospital and the Medical Center of Beaver County do not maintain radiation health or nuclear medicine departments, and are therefor not equipped to handle radioactive wastes. Duquesne Light Company maintains contamination control supplies at both hospitals, and provides periodic training related to handling contaminated patients to appropriate hospital personnel. The Presbyterian-University Hospital has the expertise and resources of the Department of Radiation Health for performing the function identified in this section. Annexes D and E are copies of the procedures which are followed by hospital personnel.

2.1 The staff at the Aliquippa Hospital and Medical Center of Beaver County will prepare for the arrival of the contaminated injured personnel in accordance with their individual radiation emergency plans.

2.2 Upon arrival at the hospital, the accompanying Radcon technician will assist the hospital staff in preparing contamination control measures, if not already done.

2.3 After the contaminated individual has been placed in the designated room:

2.3.1 Roll up the blotting paper in the hallways for disposal.

2.3.2 Place approximately twenty (20) square feet of blotting paper (or equivalent) outside of the morque room to serve as receptacles for used protective clothing.

2.3.3 Recommend appropriate protective clothing to persons entering the room and direct these individuals to remove protective clothing and other suspected contaminated items at the shoe cover removal point when leaving the room.

2.3.4 Monitor all personnel leaving the room for contamination.

2.3.5 If time permits, monitor and release the ambulance. If the ambulance is contaminated, direct the ambulance to the Station for decontamination.

2.3.6 At the direction of the attending physician, monitor the victim for contamination and apprise the physician of the results. It may be necessary to repeat this process as the hospital staff decontaminates the victim.

2.4 At the direction of the physician, restore the treatment area to normal use as follows:

2.4.1 Monitor all fixed equipment, floors, tables, and any other surfaces that may have been contaminated. Decontamiantion of contaminated equipment and surfaces will be performed by DLC personnel at the direction of Radcon supervision, to levels less than detectable, prior to release for other uses.

2.4.2 All contaminated material shall be returned to BVPS for disposal.

3. Overexposure Incidents

3.1 If the individual's dose (dose equivalent) is determined or estimated to exceed 10 rem whole body, 60 rem skin, 150 rem to an extremity or an internal exposure projected to exceed 5 rem whole body or 25 rem thyroid due to uptake and disposition of radioactive material in the body, the situation should be brought to the attention of physicians with expertise in radiation health. See Step D.1.3 and D.1.4. Necessary response will be determined by the physician.

3.2 If the individual's dose (dose equivalent) is determined or estimated to exceed 25 rem whole body, 150 rem for the skin, and/or 375 rem for an extremity, the individual shall be transferred to the Presbyterian-University Hospital for treatment and/or observation. This is performed as follows:

3.2.1 The Control Room personnel shall request an ambulance and direct the preparations for transferring the victim in accordanc with Step E.1.5 and E.1.8 through E.1.12).

3.2.2 Notify the Presbyterian-University Hospital oi the imminent arrival of the victim and initiate a RERP-ALERT. Use 1-647-3333. Provide the following information:

- The notification is a RERP-ALERT
- Name of Facility: Beaver Valley Power Station
- Name and telephone number of the Emergency Director (or other individual making notificaiton
- Estimated time of arrival of victims
- Nature and extent of injuries
- Number of victims
- If radicactive contamination is involved.

3.2.3 Notify the Radiation Medicine Department (1-647-3597) ar provide the information above and the additional technica information identified below, as applicable:

- Extent and type of contamination
- Estimated dose (dose equivalent) and type of radiation
- Affected parts of the body
- Projected uptake and identificaiton of radionuclides involved
- Other information requested by the hospital staff.

If the Radiation Medicine Department cannot be contacted, provide this information to the Emergency Room (1-647-3333).

3.2.4 Ensure that the ambulance crew understnds to deliver the victim to the rear emergency exit doors of the Emergency Department on the Ambulance Drive of Presbyterian-University Hospital, Pittsburgh. See Annex E.

NOTE

Although not required by the RERP plan (Annex E), the victim should be accompanied by a DLC Supervisor. The DLC Supervisor shall keep the Control Room apprised of the status of the victim.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.

2. Title 10 CFR Parts 20 and 50.

3. ICRP-28, "The Principles and General Procedures for Handling Emergency and Accidental Exposures of Workers"

4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

5. Annex D "Radioactive Contamination Control for Injury Cases Requiring Hospital Treatment, Procedures to be followed by Hospital Personnel"--Aliquippa Hospital

6. Annex E "Procedures for Transferring Radiation Casualties to the Radiation Emergency Response Program of the Department of Radiation Health of the University of Pittsburgh".

6. ATTACHMENTS

None

EMERGENCY EXPOSURE CRITERIA AND CONTROL

A. OBJECTIVE

In the event of an emergency, it may be necessary for some individuals to exceed established quarterly or annual exposure limits to save a life or to minimize the consequences of the incident. This procedure provides guidance and criteria for such situations.

The provisions of this procedure are applicable only in actual emergency conditions, and are applicable only to BVPS personnel performing assigned emergency functions.

The Emergency Director has the responsibility and authority to ensure that the radiation exposure of personnel performing functions necessary to contend with the emergency condition, are maintained as low as reasonably achievable and in keeping with the provisions of this EPP/IP.

The Emergency Director is the only individual who may authorize dose extensions in excess of 10 CFR 20.

B. PREREQUISITES/INITIAL CONDITIONS

An emergency condition at the Beaver Valley Power Station has resulted in radiation levels within the station greatly in excess of normal levels which require special considerations for exposure control.

C. PRECAUTIONS

1.. Personnel shall not enter any area where dose rates are unknown or unmeasureable with instruments and dosimetry immediately available.

2. Appropriate dosimetry equipment, which is capable of measuring the anticipated maximum exposure and type of radiations, shall be worn.

3. Extremity dosimeters shall be worn if anticipated exposure is greater than about five (5) times that of the whole body.

D. GUIDANCE AND CRITERIA

1. General

The exposure of personnel during emergency operations shall be maintained as low as reasonably achieveable, and should be maintained less than the administrative guides established in the BVPS Radiation Control Manual (RCM), and/or less than the Federal radiation exposure standards established in 10 CFR 20.

In order to accomplish this objective, administrative means used during normal operations to minimize personnel exposure (such as radiation work permits, radiation clearances, and ALARA measures) should remain in force to the extent consistent with timely implementation of emergency measures.

If necessary operations require personnel exposure in excess of the normal methods, or if normal access control and radiological work practices will result in unacceptable delays, the Emergency Director may, at his discretion, waive or modify the established exposure control criteria and methods in accordance with the provisions of this EPP/IP. In making such decisions, the Emergency Director should call upon the expertise of the radiation control staff onsite, if readily available.

2. Authority

The Emergency Director has the authority to perform appropriate protective and corrective measures necessary to mitigate the consequences of an accident and to place the facility in a safe condition. If necessary to effect these measures, the Emergency Director may approve personnel exposures in excess of normal guides/limits, but less than the planned radiation exposure criteria established in this EPP/IP, provided the pre-conditoins of such exposure are met. The Emergency Director shall be the only individual authorized to permit emergency exposures in excess of 10 CFR 20.

3. Planned Exposure Criteria

The exposure received pursuent to the performance of emergency measures should be commensurate with the significance of the action to be performed and should be maintained at a level which is as low as reasonably achieveable (ALARA) that the emergency condition permits. Guidelines for emergency exposure are:

Organ	Life Saving Actions	Corrective Actions
Whole Body	100 rem	25 rem
Hand and Feet	300 rem	100 rem
Thyroid	No Limit	125 rem

3.1 No upper thyroid limit is specified for life saving activities since complete loss of thyroid function may be considered an acceptable risk for saving life. However, thyroid exposure should be minimized to the extent feasible by the use of respiratory protection and/or thyroid prophylaxis.

3.2 As used in this EPP/IP:

3.2.1 Planned Actions -- Those actions which are performed intentionally. The degree of planning may be simply a decision to perform the action, or may be as detailed as time permits. The term planned actions need not infer administrative actions such as ALARA reviews, radiation work permits, and other similar work planning measures.

3.2.2 Life Saving Action -- Those actions related to the search and rescue of injured persons; or corrective actions to mitigate conditions which could result in imminent injury or substantial overexposure to numbers of individuals.

3.2.3 Corrective Action -- Those actions necessary to mitigate the consequences of the accident, to eliminate the further release of effluent, or to control significant fires.

3.3 Conditons:

3.3.1 Personnel receiving increased exposure should be volunteers or professional rescue personnel (eg: firemen who "volunteer" by choice of employment).

3.3.2 Personnel should be broadly familiar with the consequences of any exposure received under emergency conditions.

3.3.3 If possible, volunteers should be above the age of 45.

3.3.4 Women in their reproductive years shall not take part in these actions.

3.3.5 Exposures under these conditions should be limited to once in a lifetime.

3.3.6 Personnel shall not enter any area where dose rates are unknown or unmeasurable with instruments and dosimetry immediately avaialble.

3.3.7 Internal exposure should be minimized by the use of appropriate respiratory equipment, and contamination should be controlled by the use of appropriate protective clothing.

3.4 Post-exposrue Evaluations

3.4.1 Personnel receiving exposures under emergency conditions should be restricted from further occupational exposure pending the outcome of exposure evaluations and, if necessary, medical surveillance.

3.4.2 An exposure evaluation shall be performed to determine a dose equivalent for the exposure. This evaluation should be based on observed area dose rates, airborne activity measurements, and dosimetry results. This evaluation shall be documented in an appropriate format and filed with the individual's exposure records. Appropriate reports shall be submitted to the Onsite Safety Committee and the USNRC.

3.4.3 If an individual's dose equivalent exceeds 10 rem for the whole body, 60 rem for the skin, and/or 150 rem to an extremity the details of the exposure incident shall be brought to the attention of a physician. The physician shall determine the need, extent, and nature of any clinical, biological, or biochemical examiantions.

3.4.4 If an individual's dose equivalent exceeds 25 rem for the whole body, 150 rem for the skin, and/or 375 rem for an extermity, the individual shall be examined by a physician. The physician shall determine the need, extent, and nature of any clinical, biological, or biochemical examinations, or necessary medical surveillance.

3.4.5 For the purposes of this EPP/IP, the dose equivalent is equal to the total risk to the organ of interest, be it from internal exposure, external exposure, or both.

E. PROCEDURE

In the event a planned emergency exposure is necessary, the following actions should be performed. Although it is preferable to perform and document these steps prior to the exposure, if necessary the Emergency Director may vocally authorize the increased exposure and complete the documentation at a later time.

1. The Emergency Director (or designee) will complete Section A of the Emergency Exposure Authorization Form.
2. The individual to receive the increased exposure will complete Section B.
3. The individual will be briefed on the radiological and other conditions in the area (or expected in the area), the tasks to be performed, ALARA measures applicable to the task, and contingency measures, prior to entry to the affected area.
4. The individual performs the assigned tasks.
5. Following the exposure, the Radiological Control Coordiantor, or designee, will complete Section C of the Emergency Exposure Authorization Form.
6. The Radiological Control Coordinator (or Senior Radcon Supervisor in recovery organization) will complete Section D.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures

2. NCRP Report No. 39, "Basic Radiation Protection Criteria"

3. ICRP Publication 26, "Recommendation of the International Commission on Radiological Protection"

4. ICRP Publication 28, "The Principals and General Procedures for Handling Emergency and Accidental Exposures of Workers"

5. EPP 520/1-75-001 (and subsequent revisions), "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents"

6. Title 10, CFR Parts 20 and 50

7. NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

G. ATTACHMENTS

1. Emergency Exposure Authorization Form

EMERGENCY EXPOSURE AUTHORIZATION FORM

SECTION A

1. Name (to receive exposure): ____________________ Soc.Sec.No.: ____________
2. Individual Badge Number: ____________ Employer/DLC Department: ____________
3. Task(s) to be Performed: ______________________________
   ____
4. Date of Authorization: ____________ Authorized Limit: ____________
5. Conditions:
   - ☐ Individual is a volunteer or professional rescue person
   - ☐ Individual is broadly familiar with radiological consequences of exposure
   - ☐ Woman capable of reproduction shall not take part. (Reg. Guide 8.13)
   - ☐ Individual has not received an emergency exposure before
   - ☐ Dose rates in area known/measureable
   - ☐ Life Saving Action?
   - ☐ Corrective Action?
6. Emergency Director: ______________________________ (Signature)

SECTION B

I have been briefed in the radiological consequences of the proposed emergency exposure, and I have volunteered to perform the emergency measures during which I will receive the emergency exposure.

7. Signature: ______________________________ Date: ____________

SECTION C (Attach exposure evaluation)

1. Dose equivalent assigned for entry: ______________________________
   ____
   ____
2. TLD/Dosimeter Results: ______________________________
   ____
3. Bi assay Results: ______________________________
   ____
   ____

4. Medical Evaluation/Action: ______________________________

____

____

____

Doctor ______________________________

5. Radiological Control Coordiantor: ______________ Date: ____________

SECTION D

1. Disposition (Allow additional exposure, restricted access, etc) ____________

____

____

____

____

____

2. Radiation Control Supervisor: ______________ Date: ____________

EMERGENCY PERSONNEL MONITORING

A. OBJECTIVE

During an emergency condition, substantial quantities of radionuclides, some of which are not encountered to any significant degree during normal operation, may be released to Station areas and/or the environment. The operation of the BVPS personnel dosimetry program provides reasonable assurance that the exposure of Station personnel during normal operations is accurately determined and recorded. However, under emergency conditions, the use of dosimetry may have to be extended, may have to be supplemented with additional equipment, or may have to be replaced with alternative equipment.

This procedure provides general guidance to the TSC staff, and in particular, the Radiological Control Coordinator, for the establishment of personnel monitoring suitable for the radiological conditions observed at the time of the accident.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.
2. As a result of the emergency condition, significantly abnormal radiation levels are noted.

C. PRECAUTIONS

1. During emergencies when there is a great demand for TLD badges, compounded by delays in processing the badges and recording the exposures in the exposure record system (due to large number of devices in use, and/or inaccessibility to TLD processing and data systems, etc.), caution shall be exercised to ensure that the exposure recorded on the badges is credited against the proper individual, and that all exposures are recorded. For this reason, processed and annealed TLD badges should not be re-issued to another individual until it is certain that the association between that particular badge number and the individual to which it was last issued has been appropriately severed, and that the exposure received by the last individual has been properly credited against that individual..

2. To facilitate later evaluation of exposures, all dosimetry issue and processing documents should be marked with the date and time the document was completed or processed.

D. GUIDANCE AND CRITERIA

1. General

1.1 The Beaver Valley Power Station Radiation Control Manual (RCM) Chapter 1 contains standards for personnel monitoring. Chapter 3, Part 4 of the RCM contains procedures for the issuance, use, collection and processing of dosimetry devices. Chapter 3 Part 12 and Appendix 10 to the RCM discusses documentation of measured personnel exposure. Appendix 7 and Chapter 3, Part 4 of the RCM address requirments for bioassay. The provisions of these documents shall apply to emergency conditions except as specifically provided in this EPP/IP or in the BVPS Emergency Preparedness Plan, or as provided by the Radiological Control Coordinator.

1.2 Exceptions or modifications to normal personnel dosimetry practices may be approved by the Radiological Control Coordinator and/or the Emergency Director. Four modifications/exemptions are addressed in this EPP/IP. The first is the extension of dosimetry to areas beyond the designated controlled area. The second is the accelerated collection and processing of dosimetry devices. The third is increased bioassay analyses, and the fourth is assignment of supplementary dosimetry.

2. Assignment of Dosimetry Outside the Designated Controlled Area

2.1 Personnel radiation exposure must be monitored by regulation if 25% of the applicable limit could be received in a quarter by an individual in a restricted area. For radiation workers older than 18 years, this equates to 312 mrem. Chapter 1 of the RCM provides that TLD badges be assigned and issued to all radiation workers and to any other individual who is expected to require access to a controlled area. The TLD badges must be worn by all persons at all times when in a controlled area.

2.2 If a significant release of radioactivity occurs and results in radiation levels such that if an individual were to remain in the area, he would receive a dose in excess of 2 mrem in any one hour, or a dose of 100 mrem in any seven consecutive days, the affected area shall be designated as controlled areas and dosimetry shall be worn in the affected area.

2.3 As a general rule, personnel remaning onstie following a Site evacuation should wear appropriate TLD badges anywhere on the Beaver Valley Site. In addition, monitoring teams performing offsite or onsite surveys shall retain their dosimetry.

2.4 In the event of an emergency involving a Site evacuation, personnel dosimetry issue and collection operations may have to be relocated to a remote location other than the guardhouse, in order to minimize the background reading on the badges. As radiological conditions on the site return to normal, the dosimetry issue operation can be moved back to the guardhouse (or to another designated location) and the areas requiring dosimetry for entry to reduced to those areas where it is warranted by radiation levels, or to within the controlled area.

3. Accelerated Dosimetry Processing

3.1 Chapter 1 of the BVPS RCM provides for TLD processing at least once per quarter, and whenever the individual's exposure since the last TLD reading exceeds 800 mrem (by pocket dosimeter, or by dose projection). In addition, the TLD badge will be processed when the results of the previous readings plus two time (2x) the pocket dosimeter reading since the last TLD processing exceed either 2700 mrem per quarter, or 4700 mrem per year.

3.2 In addition to the requirments of Step 3.1:

3.2.1 Daily readings of TLDs should be performed during the emergency and, initially, during recovery operations until such time as exposure trends have been identified and normal access and exposure control methods have been re-established. This should be done for any Site or General emergency that has resulted in the release of radioactivity to the Station, or to the environment.

3.2.2 In the event of an accidental exposure, or a planned emergency exposure, the TLDs of the individuals involved shall be processed as soon as practicable following exposure. Further exposure of these individuals, should not be allowed until the results of their TLD badge reading are available and have been evaluated.

3.2.3 TLDs left on the badge racks and the associated control badges shall be read as soon as possible following exposure, in order that the personnel exposure prior to the accident may be evaluated to provide a basis for subsequent exposure.

4. Increased Bioassay Analyses

4.1 Chapter 1 and Appendix 7 of the BVPS RCM contains provisions for the bioassay program. Under these provisions, a lung and thyroid count is required for any person whose normal duties may involve routine radiation work (eg: all individuals classified as radiation workers):

4.1.1 Upon assignment to BVPS

4.1.2 At least once per calendar year while assigned to BVPS

4.1.3 Upon termination from BVPS

In addition, any person(s) who by reason or nature of their work have been subjected to ingestion, inhalation or absorption of contamination in the opinion of Radcon supervision should have an immediate whole body count performed.

4.2 In addition to the requirments of Step 4.1:

4.2.1 If whole body count results indicate significant fission products such that Sr89 or Sr90 uptake is suspected, bioassay measurements will be performed in addition to whole counting. A preliminary screen level for above which urinanalysis is indicated is 70nCI o

I-131, if the station has been at power within 40 days prior to the accident. Arrangements have been made with offsite vendors for appropriate analyses if this screening level is exceeded. The Radiological Control Coordinator will establish screening levels based on the actual airborne radioactivity mix following the accident, if the station has been shutdown longer than 40 days, or refine the preliminary screening level.

4.2.2 If a long-tern recovery effort is necessary, periodic comparison of whole body counting and urinanalyses should be performed on a random sampling of radiation workers to establish the adequacy of the monitoring program. MCP-hours calculations could also be used in this evaluation. Urinanalyses should include gamma scans, Sr89 & Sr90 determinations, tritium determinations, and alpha determinations.

4.2.3 Non-routine whole body counts (and urinanalyses, if indicated) should be performed on any individual who is suspected or known to have an exposure to airborne radioactivity:

- 10 MPC-hours in a week, including the appropirate protection factor for the respiratory protection, providing that the use of the respirator was in accordance with the respiratory protection program as prescribed in the RCM, and EPP/IP-3.4, "Emergency Respiratory Protection,
- 40 MPC-hours in a month. Appropriate protection factors may be applied as specified above,
- 120 MPC-hours in a calendar quarter. Appropriate protection factors may be applied as specified above, or,
- A nasal smear indicates nasal contamination in excess of 100 cpm above background.

4.2.4 If the result of the bioassay analysis indicates that a given individual has an uptake of a radionuclide, or combinations of radionuclides, that exceeds 5% of the MPBB for that radionuclide, or group of radionuclides, an investigation shall be performed and documented. Recounts or additional samples/analyses shall be performed to determine the validity of the result. If the result is valid, the following minimum additional actions should be taken:

- Restrict the access of the individual to prevent additional exposure until the extent of the uptake can be determined.
- Arrange a schedule of additional analyses as necessary to support dose assessment,
- Evaluate, using suitable models and calculational methods, the dose equivalent of the uptake. Document all assumptions and calculations. The dose equivalent shall be added to the individual's NRC Form 5 as appropriate, and,
- If the suspected uptake exceeded MPBB, the incident shall be reported to the NRC in accordance with Title 10, Code of Federal Regulations, Part 20.405.

5. Supplementary Dosimetry

5.1 In the event of an emergency, some areas within the Station may be affected by susbstantial quantities of radionuclides that differ in magnitude and/or nature from those typically observed during normal operations. The most significant of these is likely to be beta emmiters which will give rise to substantial skin doses. Most TLD badges are capable of measuring typically occuring noble gases, although there may be difficulty with the 80 keV gamma from Xe-133. However, in such fields, the TLD must be worn in a manner which is consistent with the amount of exposed skin. For example, if the eyes and the skin of the face are exposed, the TLD should be worn on the outside of the protective clothing. If the entire body is covered with protective clothing and the individual is wearing a full-face respirator (or hood), the TLD should be worn on the inside of the protective clothing. This is particularly important if several layers of protective clothing (and especially plastic rain-suits) are being worn.

5.2 Extremity badges and neutron badges should be worn as indicated in radcon procedures.

5.3 High range self-reading dosimeters should be used for entering areas when the dose commitment is expected to exceed the range of the low range dosimeter in a short period of time.

6. Post Accident Exposure Evaluation

6.1 In those situations in which an individual has been contaminated and some persistent contamination has remained following decontamination; and/or the individual has received significant external or internal exposure in excess of 10 CFR 20 limits as indicated by whole body/bioassay or by personnel dosimetry or by survey data, and evaluation of the individual dose commitment will be performed.

The Radiological Programs Coordinator and the Radiological Operations Coordinator, in conjunction with outside consultation (such as Drs. Wald and Spritzer), shall perform this evaluation using accepted health physics dosimetry practices as outlined in guidance documents such as ICRP-30, ICRP-28, IAEA-152, and the MIRD pamphlets. This evaluation will be documented, reviewed by the OSC, and filled in the individual's exposure record.

E. PROCEDURE

Dosimetry actions and bioassays are performed in accordance with the Beaver Valley Power Station RCM except as noted in Section D of this EPP/IP

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures
2. Title 10, CFR Part 20
3. Regulatory Guide 8.9 "Acceptable Concepts, Models, Equations, and Assumptions for a Bioassay Program"
4. Beaver Valley Power Station Radiation Control Manual
5. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

G. ATTACHMENTS

None

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RE-ENTRY TO AFFECTED AREAS

A. OBJECTIVE

This procedure provides instructions for re-entry to affected areas for which the magnitude of radiological conditions are unknown. This procedure may be implemented simultaneously with EPP/IP-5.1, "Search and Rescue" and EPP/IP-2.1, "Emergency Radiological Monitoring".

The Emergency Director has the responsibility and authority for the safe implementation of this procedure.

B. PREREQUISITES/INITIAL CONDITIONS

1. An emergency condition at the Beaver Valley Power Station has resulted in the evacuation and isolation (if applicable) of affected areas.
2. The magnitude or nature of the radiological hazard in the evacuated area is unknown.

C. PRECAUTIONS

Because of the unknown conditions within the affected area, appropriate precautions for personnel safety shall be implemented. These include, but are not limited to:

1. Re-entry teams shall be comprised of a minimum of two individuals. These individuals shall remain in visual/voice contact with each other at all times when in the affected area.
2. If the ventilation to the area has been isolated, and/or if there is reason to believe that the air within the area is toxic or there is an oxygen deficiency, appropriate self-contained breathing apparatus shall be used. In this case, in addition to the two man entry team, one or more additional individuals shall be assigned to remain outside of the affected area, in appropriate protective

clothing and wearing SCBAs on standby, ready to enter the area to affect rescue.

3. Life-lines should be used in areas containing heavy smoke, or in areas where visual contact cannot be maintained with the re-entry team.

4. If warranted, personal air samplers and/or personal alarming dosimeters should be used.

5. Protective clothing should be chosen on the basis of the suspectedc conditions, or if a reasonable estimation cannot be made, the protective clothing with the highest protection should be used.

6. If possible, areas should be ventilated prior to entry.

D. PROCEDURE

1. Re-entry to Areas Within Plant Buildings

1.1 The Emergency Director shall utilize all pertinent data available including area and process monitoring channels, survey data from adjacent areas, observations made by evacuated personnel, and any other source to determine:

1.1.1 Which plant areas are affected

1.1.2 The conditions (hazards, temperature, air conditions, etc) in the areas

1.1.3 If any personnel are trapped or disabled in the area

1.1.4 If it is practical to redcue the potential hazards to re-entry personnel (ventilating, securing systems, etc.

1.1.5 If re-entry can be defered without affecting plant safety to to allow for radioactive decay.

1.2 Form an appropriate re-entry team(s). The Radiological Control Coordinator (or Radcon supervision) should be called upon to organize and direct re-entry surveys. Where possible re-entry teams should be comprised of volunteers and at least one member of the team should be from the Radcon group.

1.3 At the direction of Radcon supervision (or Emergency Squad Chief) obtain appropriate equipment and don appropriate protective clothing and respirators. Re-entry personnel should have:

1.3.1 Appropriate protective clothing. If in doubt, don full protective clothing

1.3.2 Appropriate respirators

NOTE

Only Self-Contained Breathing Apparatus (SCBA) should be used for re-entry and/or rescue purposes. Air-purifying respirators shall not be used if toxic gases or oxygen deficienty is present or suspected. Air hose respirators should notbe used due to difficulties in handling hoses in confined areas during emergencie

1.3.3 High range self-reading pocket dosimeters

1.3.4 TLD badge

1.3.5 Walkie-Talkie

1.3.6 High range survey instrument--preferably with telescopic probe

1.3.7 Sufficient contamination swipes

1.3.8 Air sampler and filter media/cartridges

1.3.9 (if warranted) Personnel air monitors and alarming dosimeters.

1.4 As appropriate to the radiological conditions, and/or the re-entry team assignment perform the following:

1.4.1 Turn on and check the operation of the survey instrument.

NOTE

If at any time the survey instrument appears to be malfunctioing, immediately retreat to a safe area. Be especially careful for unexpected low survey instrument readings. Some GM survey instrument will read "0" or a low value if the detector is saturated by extremely high radiation levels. For the E530 saturation is not expected to occur at dose rates less than 1000 R/hr.

1.4.2 Approach the affected area, continuouly monitoring does rates.

1.4.3 Unless directed otherwise, continuously apprise the TSC/EOF of the progress of the re-entry team, conditions observed dose rates.

1.4.4 Re-entry team members shall check their pocket dosimeters periodically and report the results to the TSC/EOF. The frequency of these checks should be consistent with the observed dose rate.

1.4.5 If at any time during the re-entry, observed dose rates exceed 100 mrem/hr (or other pre-determined level), or if the exposure of any member of the re-entry team exceeds 3 rem, (or other specified maximum allowable dose), the entire re-entry team shall retreat to a safe area.

1.4.6 Perform appropriate surveys and obtain air samples as directed by the Radiological Control Coordinator (or the Emergency Director). Perform and document this survey in accordance with EPP/IP-2.2, "Onsite Monitoring for Airborne Release".

1.4.7 Perform appropriate inspections, repairs and operations, as directed.

1.4.8 Perform appropriate rescue and first aid functions if trapped or disabled personnel are discovered in the area.

1.5 At the completion of assigned functions, leave the affected area and return to the control point. Remove protective clothing and monitor prior to leaving the area.

2. Re-entry of the Site

This section of the procedure assumes personnel have evacuated the site and have assembled at one of the remote assembly areas, or at the alternate EOF.

2.1 Form an appropriate re=entry team(s). The Radiolgoical Control Supervisor (or other Radcon supervision should be called upon to organize and direct re-entry surveys. Where possible, re-entry teams should be comprised of volunteers and at least one member of the team should be from the Radcon group.

2.2 At the direction of Radcon supervision, obtain appropriate equipment and don appropriate protective clothing and respirators. Re-entry personnel should have the equipment identified in Step 1.3 above.

2.3 Obtain a vehicle in which to approach the site. Note gas tank level. If the level is less than 1/2, use another vehicle.

2.4 If available, spread plastic on the floor of the vehicle and seats, in order to minimize contamination.

2.5 As appropriate to the radiological conditions and/or re-entry team assignment, perform the following:

2.5.1 Turn on and check the operation of survey equipment.

NOTE

If at any time the survey instrument appears to be malfunctioning, immediately retreat to a safe area. Be especially careful for unexpected low survey instrument readings. Some GM survey instruments will read "0" or a low value if the detector is saturated by extremely high radiation levels. For the E530, saturation is not expected to occur at dose rate less than 1000 R/hr.

2.5.2 Using the prepared vehicle, approach the site from upwind as much as possible. Continuously monitor radiation levels by extending the instrument probe out the vehicle window (if weather permits).

2.5.3 Unless directed otherwise, continuously apprise the EOF of the progress of the re-entry team, conditions observed, and dose rates.

2.5.4 Re-entry team members shall check their pocket dosimeters periodically and report the results to the EOF. The frequency of these checks should be consistent with the observed dose rate.

2.5.5 If at any time during the re-entry, observed dose rates exceed 100 mrem/hr (or other predetermined level), or if the exposure of any member of the re-entry team exceeds 3 rem, (or other specified maximum allowable dose), the entire re-entry team shall retreat to a safe area.

2.5.6 Perform assigned surveys in accordance with EPP/IP-2.3 Offsite Monitoring for Airborne Rlease". Document all results on the EPP Survey log.

2.5.7 At the site boundary, enter the site and perform an additional survey about halfway between the affected unit and the site boundary, as provided in EPP/IP-2.3.

2.5.8 If instructed to re-enter the unit, approach the guardhouse, continuously monitoring dose rate. Upon entereing the guardhouse, notify the EOF of the progress and dose rates observed.

2.5.9 If directed further, re-enter the unit and continue as provided in Step 1 above.

3. Follow-up Actions

3.1 Upon completion of the re-entry, re-entry team members shall report to Radcon supervision for exposure evaluation and follow-up.

3.2 When warranted, the Emergency Director shall restore access to the affected areas upon the advice of the Radiological Control Coordinator, and the results of the re-entry surveys. The Radiological Control Coordinator will determine appropriate access control measures for entry to the area for recovery operations.

E. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures

2. Title 10 CFR Parts 20 and 50.

3. Beaver Valley Power Station Radiation Control Manual (RCM)

4. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

F. ATTACHMENTS

None

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TERMINATION OF THE EMERGENCY AND RECOVERY

A. OBJECTIVE

This procedure provides criteria and guidance for termating a declared emergency condition and restoring the Station as close as possible to its pre-emergency status. The termination of an emergency and recovery efforts will depend on the nature of the emergency and the status of plant systems following corrective measures, and although the general provisions within this procedure are expected to be applicable to all emergencies, it may be necessary to supplement this guidance with provisions specific to the emergency at hand. In particular, actual recovery procedures shall be formulated and approved by the Onsite Safety Committee prior to implementation of recovery efforts.

B. PREREQUISITES/INITIAL CONDITIONS

An emergency condition has been declared at the Beaver Valley Power Station. corrective and protective actions have been implemented and control has been regained over plant systems and/or inadvertent radioactivity releases.

C. PRECAUTIONS

None

D. GUIDANCE AND CRITERIA

1. Progression from Emergency to Termination/Recovery

1.1 Actions taken during an emergency situation can be categorized into two general phases: response and recovery. Response actions are the corrective and protective measures taken to mitigate the consequences of the event and to place the emergency under control. Recovery actions are longer-term actions taken to restore the Station, as nearly as possible, to its pre-emergency condition.

1.2 The extent and nature of the corrective and protective measures and the extent of recovery operations will depend on the emergency conditions at hand and the status of Station areas and equipment. In many emergency situations, the emergency condition may be resolved without significant plant damage, and thus, the Station can be restored to a normal operation mode without a definative recovery phase and without extensive outside assistance. In the event of more extensive damage, a long-term recovery may be necessary, and the man-power and resources demand of such a long-term recovery will require the establishment of a recovery organization.

1.3 At the onset of an emergency condition, response actions to mitigate the consequences of the accident take precedence over recovery actions. The Emergency/Recovery Manager may initiate some limited recovery operations during the response phase. Gradually as the response effort begins to abate, recovery efforts gain more importance. Finally, a point is reached where the emergency situation has decreased to the extent that it can be considered, for all practical purposes, to be resolved. At this point, the emergency can be declared to be terminated, and a recovery organization implemented if necessary.

1.4 If following termiantion, the emergency situation recurs, the Emergency/Recovery Manager will re-activate the onsite emergency organizations, and if necessary, the offsite emergency organizations. Recovery efforts will be suspended until the Emergency/Recovery Manager allows them to resume.

2. Termination Criteria

An emergency condition can be considered resolved, and a recovery organization established (if necessary) when the following guidelines have been met:

2.1 In-plant radiation levels are stable or are decreasing below acceptable levels with time.

2.2 The release of radioactive material to the environment is under control or has ceased, and the potential for additional uncontrolled releases has decreased to an acceptable level.

2.3 Any fire, flooding, earthquake, or similar initiating events are under control or have ceased.

2.4 The plant is in a stable configuration.

2.5 For contaminated/injured personnel, when the victim(s) has been transferred to a hospital, or has received appropriate medical treatment.

2.6 For emergency conditions classified as Unusual Events, when the specified corrective action has been taken or when the plant has been placed in the appropriate operating mode (LCO-related EALs), and when notifications are complete.

3. Authority

3.1 The Emergency Director (in conjunction with the Emergency/Recovery Manager for Site Area or General Emergencies) will make the determination of when an emergency condition is resolved, in accordance with the above criteria, and may declare the termination of the emergency.

3.2 For any emergency condition involving plant systems and/or a plant shutdown, the Emergency Director will make a determination as to when it is safe to return the plant to a normal operating mode. DLC Licensing and Compliance will resolve any license or technical specifications concerns related to the emergency.

4. Recovery Organization

Although the planning for recovery and the extent of the recovery efforts will vary according to the nature of the specific emergency situation, a long-term recovery organization is defined in Section IX of the BVPS Emergency Preparedness Plan.

5. Recovery Operation

5.1 Recovery activities not covered by existing approved procedures shall be pre-planned and approved by the Onsite Safety Committee prior to their implementation.

5.2 Station recovery activities shall be in accordance with the Station Technical Specifications and other license conditions. Specifically, during recovery operations, the radiation exposure limits of 10 CFR 20 shall apply. Compliance with these limits shall be the responsibility of the Emergency/Recovery Manager via the Radiation Control Department.

5.3 Recovery actions that plan for or may result in radioactivity releases will be evaluated by the Emergency/Recovery Manager and his staff as far in advance of the event as is possible. Such events and data pertaining to the releases will be reported to the appropriate offsite emergency response organizations and agencies, even if the release is within normal technical specifications, for as long as the recovery operation continues.

5.4 The recovery opertaion will continue until the Station is returned to its pre-emergency status, or as determined by the Vice President-Nuclear Division.

E. PROCEDURE

When it has been determined that the emergency condition has been resolved, the following shall be performed as applicable, and as directed by the Emergency/Recovery Manager:

1. The offsite organizations shall be notified that the emergency condition at the Station has been resolved and that onsite emergency operations will be termianted. If a recovery organization is being established, this should be included in the notificaiton.

NOTE

For Unusual Events in which the emergency is resolved prior to the initial notification, an appropriate phrase should be added to the notification to the effect that the emergency condition has been resolved.

2. DLC PID should be notified to make a press release on the termination of the emergency (and the start of recovery efforts).

3. Any emergency radiation exposure limits shall be terminated and normal radiation control measures re-established.

4. Any procedural waivers instituted during the emergency should be terminated, or formally documented by procedure changes.

5. Emergency organization personnel should be directed to assemble all documents generated during the emergency and to submit them to the Communications and Records Coordinator.

6. Any emergency used during the emergency shall be serviced, as necessary, and returned to designated torage locations. Any damaged or defective equipment shall be brought to the attention of individuals responsible for its maintenance. Consumable materials (ie: procedures, forms, bags, etc.) shall be restocked as soon as posisble.

7. If a long-term recovery operation is indicated, a recovery organization will be established in accordance with the BVPS Emergency Preparedness Plan.

8. If applicable, the Emergency Preparedness Plan should be evaluated to ensure that an adequate emergency preparedness stature can be maintained in light of the degraded plant conditions (ie: inaccessability of evacuation assembly areas, inoperative emergency instrumentation and equipment as it relates to the EPP) and appropirate corrective measures implemented.

9. For Alert and higher emergency conditions, the Emergency Director, with the assistance of the TSC Staff will prepare a report of the emergency and submit this report to the Onsite Safety Committee. For Unusual Events, the Licensee Event Report (LER) satisfies this requirment.

10. The Onsite Safety Committee will review the Emergency Director's report and will evaluate and assign responsibilities for corrective actions. This report will be submitted to the Offsite Review Committee for review and submission to the NRC as per Section 6, Administrative Section, of the BVPS Technical Specifications.

11. The Onsite Safety Committee shall review/approve procedures for Station recovery that include as applicable:

    11.1 Procedures for decontamination

    11.2 Procedures for repair

    11.3 Recommendations for speical inspections and tests that must be performed to assure the integrity of the plant and adequacy of the repairs.

    11.4 Radioactive waste processing and handling procedures

    11.5 An estimate of the radiation exposure that will be accumulated by personnel in executing these procedures

    11.6 Exposure reduction methods (ALARA) to minimize the projected exposure of personnel.

12. The Emergency Planning Supervisor should review the various reports on the emergency to identify deficiencies in the Emergency Preparedness Plan and implementing procedures, if any, and should initiate appropriate corrective action, if necessary, as soon as possible.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures
2. Title 10, CFR Part 20 and 50
3. NUREG-0654 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

G. ATTACHMENTS

None

EMERGENCY EQUIPMENT CHECKLIST AND MAINTENANCE PROCEDURE

Purpose

To provide inventory checklists and maintenance procedures for emergency equipment.

Summary

Checklists are provided for inventory use. Replacements are made as soon as possible by the Rad Tech when deficiency or shortage is discovered. Calibration due dates will not exceed their use expiration dates and will be replaced or recalibrated prior to expiration date. Calibration procedures are referenced for equipment requiring periodic calibration. Complete inventory checklist, noting all applicable data and return to Rad Con Foreman when satisfactorily ecompleted.

Inventories are performed quarterly or after each applicable inventory equipment usage (drills, etc.). This equipment is inventoried by the Radcon personnel at BVPS and completed inventory results are reviewed by the Rad Con Foreman and sent to re_ponsible EPP supervisor. Original records will be transferred to the Document Control records files.

A. Procedure (Inventory and Check-out, Quarterly and After Use)

1. G.M. survey meters (Responsibility - Rad Tech, steps a and b)

   a. Perform inventory check and replace survey meters with recently calibrated instruments or verify calibration.

   b. Check that the serial number and calibration date of the replacement is recorded on the inventory checklist.

2. Survey instruments - Ion chamber (Responsibility - Rad Tech, step a)

   a. Perform inventory check and calibrate according to BVPS Radcon Manual, Chapter 4.

3. Air samples (Responsibility - Rad Tech, steps a and b; Meter and Control Repairman, step c)

   a. Perform inventory check and replace if missing or out of calibration and notify Radcon Foreman (who will notify MCR Foreman).

3. b. Run for at least 5 minutes and check for proper operation, recording flow rate in "Remarks" section.

   c. Calibrate air flow according to the latest Field Calibration Procedure CP 2019.

4. Radios (Responsibility - Rad Tech, step a; Operations personnel and Security personnel, step b; Communications Dept., step c)

   a. Proper number of radios are present in designated location

   b. Check for proper operation, send and receive, with an operating radio of same frequency.

   c. Repair, if inoperable.

5. Air Paks (Responsibility - Rad Tech, step a; Maintenance, step b)

   a. Perform inventory check and notify any discrepancies to the Rad Con Foreman (who will notify the Maintenance Foreman).

   b. Air Paks are maintained by Maintenance Dpet., any deficiencies should be forwarded to Maintenance Foreman and Safety Engineer, and replaced by Maintenance if required.

6. Dosimeters (Responsibility - Rad Tech, steps a, b and c).

   a. Perform inventory check and replace with recently calibrated dosimeters of the same range.

   b. Calibrate according to BVPS Radcon Manual, Chapter 3, Part 4.

   c. Record serial number and calibration date of replacement on checklist.

7. Respirators and cartridges (Responsibility - Rad Tech, step a)

   a. Perform inventory check and inspect according to BVPS Radcon Manual, Chapter 3, Part 10, and replace if required.

8. Batteries (Responsibility - Rad Tech, steps a and b)

   a. Perform inventory check of batteries as specified by the BVPS Radcon Manual, Chapter 4.

   b. Replace spare batteries, flashlight batteries, etc. during each quarterly inventory, or as specified on the inventory list.

9. Cloth equipment (Responsibility - Rad Tech, step a)

   a. Perform inventory check and replace any cloth equipment which appears to be ripped, torn, or badly soiled.

10. Rubber and rubberized equipment (Responsibility - Rad Tech, step a)

    a. Perform inventory check and replace any rubber or rubberized equipment which appears to be ripped, cracked or otherwise significantly damaged.

11. Maps, lists, data sheets, procedures, paper supplies, etc. (Responsibility - Rad Tech, step a; Op. Proc. Engr., step b)

    a. Perform inventory check and check that all items are current, in order, and in good condition.

    b. Restore items that are deficient or replace if out of date.

12. Miscellaneous equipment (Responsibility - Rad Tech or Op. Proc. Engr., step a; Rad Tech, step b)

    a. Perform quarterly inventory check, checking that the proper number is in supply as indicated on the checklist and that each is serviceable, and replace or restore, if required, as soon as possible.

    b. Check that the lead seals are in place on Emergency Cabinets.

LISTING OF EPP INVENTORY CHECKLISTS

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C-18	Admin. Bldg. Assembly Area	Admin. Bldg. Basement
C-19	Tech. Support Center (Interim)	Admin. Bldg. Basement
C-20a	EA & DP Room	Admin. Bldg. Basement
C-20b	Emergency Operations Facility (Interim)	Admin. Bldg. Basement
C-21 a & b	Operations Support Center Cabinet	Process Inst. Room
C-22 a & b	Radiological Emergency Van	Parked on-site
C-23 a & b	EPP Air Sample Carts	Turbine Deck

INVENTORY CHECKLIST EMERGENCY CABINET NO. 1

Emergency Control Center
Location: Control Room - Shift Supervisors Office (Desk)

Item/Equipment	Quantity ( )	Serial No./ EPP-Section	Issue / Rev. No.	Calibration Due Date	Available/ Operable	Remarks
BVPS EPP (Controlled Copy #2)	1	Vol I (EPP) Vol II (IP's				Copy #2 - SS Office
BVPS EPP (Controlled Copy #3)	1.	Vol I (EPP) Vol II (IP's)				Copy #3 - Control Room
Geodetic Survey Map 10 mile EPZ	1		Wall Mounted			
First Aid Kit	1					
Blanket	1					
Envelopes of Notificaiton Forms/Logs						Inventory on Envelopes
Emergency Headset/ Handset Phones	2 (MIN.)					
BVPS Site Maps	2					
Laminated Survey Route Maps	3					In Envelope
Dose Evaluation Aide	1					Circular Protractor Device
Engineer's Scale (Triangular Ruler)	1					
Duquesne Light Co. Phonebook	1					
BVPS EPP-Implementing Procedures Dose Assessment Section	4	EPP/IP-2 series				In Envelope
Potassium Iodide Tablets	1 Box			*		*Note expiration date
Map 10 mile EPZ (Rolled-up)	1					
Keys to Hookstown & Kennedy's Corner Radio Stations (Labeled EPP Substation Keys)	2					Keys #314 & 315 Inside Breakglass Box
Meterological overlays	1 Set					
Envelope of Stationery Supplies	2					Inventory on Envelopes
Hi-Band Walkie Talkie Radios	At Least 3					

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./ EPP Section	Calibration Due Date/ Rev. No.	Dated	Rad Con Foreman

When all items have been replaced and all deficiencies corrected, send 1 copy to Rad Con Supervisor and 1 copy and original to responsible EPP Supervisor.

Location: Fire Brigade Storage Room - Turbine Deck
(See Control Room for Key)

Item/ Equipment	Quantity (✓)	Serial No.	Issue / Rev. No.	Calib. Due Date	Available/ Operable	Remarks
Rolls of radiation warning tape	6					
Roll of tuck tape	1					
Rolls of radiation barrier tape	4					
Anti-C's						
coveralls	8 prs.					
shoe covers	8 prs.					
gloves	8 prs.					
head covers	8					
Grease pencils	5 (min.)					
Pencils (sharp)	24					
Flashlight (+Spare Batteries)*	2					*
Dosimeter Charger and Battery *	1					*
MSA Air Packs	5 (min.)					*Check Air Cyl[illegible] Pressure (>2000 p[illegible]
Extra Breathing Air Cylinders	5 (min)					*Check Air Cylinde[illegible] Pressure (>2000 p[illegible]
Personnel Carrier	1	(Located on Turbine Deck Area)				

* Replace batteries with new ones each quarterly check and verify operable.

Inventory Conducted by: ______________________ Date: ____________
Rad Tech

Reviewed by: ______________________ Date: ____________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./ EPP Section	Calib. Due Date/Rev No.	Dated	RadCon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Rad Con Supervisor and one copy and original to responsible EPP Supervisor.

Water Monitoring Team Kit

Location: Fire Brigade Storage Room - Turbine Deck
(Inside Emergency Cabinet No. 2)

Item/ Equipment	Quantity (✓)	EPP Section	Issue / Rev. No.	Calib. Due Date	Available/ Operable	Remarks
1 liter polyethlene bottle	20	X	X	X		
Watch	1	X	X	X		
Two Gal. Bucket	1	X	X	X		
Light rope	~ 30 ft.	X	X	X		
Flashlight (+ spare batteries)*	2	X	X	X		*
Raincoats & caps	2	X	X	X		
Offsite Monitoring Liquid Proc.	2	EPP/IP 2.4+2.7		X		
Rubber gloves	2 pr.	X	X	X		
Envelope of Stationary Supplies	1	X	X	X		Env. of Dimes
Saran Wrap (protect detector)	1 Box	X	X	X		
Button Source (Cs-137)	1	X	X	X		

*Replace batteries with new ones each quarterly check and verify operable.

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No /EPP Sect	Calibration Due Date/Rev No.	Dated	RadCon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Rad Con Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - MONITORING KITS

Inventory for Monitoring Kit 1
Location: Fire Brigade Storage Room - Inside Emergency Cabinet No. 2

Item/Equipment	Quantity (✓)	Serial No./ EPP Section	Issue / Rev. No.	Calibration Due Date	Available/ Operable	Remarks
G.M. survey inst. E140, Probe HP-210	1 ea					
G.M. survey inst. E530, Probe HP-240	1 ea					Or Equivalent
Survey Inst. - Ion Chamber	1					Or Equivalent
Self-reading dosimeters (0-500 mrem)	2					Rezero, if necessary
BVPS-EPP Implementing Procedures Dose Assessment Section	2	EPP/IP- 2 series				In Envelope
Re-entry to Affected Area procedure	2	EPP/IP - 6.1				In Envelope
Flashlights (4 spare batteries)*	2					*
Watch	1					
Air Sampler - DC	1					
Air Sampler filters	50					Note: (1)
Air sampler charcoal cartridges	10					
Silver Zeolite Cartridges	12					
Potassium Iodide Tablets	10 Bottles			**		
Laminated Survey Route Maps	2 (MIN)					**Note Expiration Date
Polyethylene bags	20					
Rolls of tuck tape	1					
Respirators and Cartridges	At Least 2					
Raincoats and caps	2					Note: (2)
Radio antenna	1					
Anti C's						
coveralls	2 pr.					
shoe covers	4 pr.					
gloves	4 pr.					
head covers	2					
Envelope of Tags/ Stationary Supplies	1					Inventory on Envelope

*Replace batteries with new ones each quarterly check and verify operable.

NOTES: (1) Air Sampler: Check operability of Air Sampler by hooking up to the battery from the Radcon Emergency Carts. Connect Sampler to Battery for verification of Operability. Note flow rate in "Remarks" section. Connect charge to battery for recharging when complete.

(2) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken or if expiration date within next 3 months.

Inventory Conducted By: ______________________________ Date: __________
Rad Tech

Reviewed By: ______________________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________________

Item Replaced	Replaced By	Serial No./EPP Section	Calib. Due Date/Rev. No.	Dates	Rad Con Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - MONITORING KITS

Inventory for Monitoring Kit 2
Location: Fire Brigade Storage Room - Inside Emergency Cabinet No. 2

Item/Equipment	Quantity (✓)	Serial No./ EPP Section	Issue / Rev. No.	Calibration Due Date	Available/ Operable	Remarks
G.M. Survey inst. E140, Probe HP-210	1 Ea					Or Equivalent
G.M. Survey inst. E530, Probe HP-240	1 Ea					Or Equivalent
Suvery Inst. - Ion Chamber	1					
Self-reading dosimeters (0-500 mrem)	2					Rezero, if necessary
BVPS EPP Implementing Procedures Dose Assessment Section	2	EPP/IP-2 series				In Envelope
Re-entry to Affected Area procedure	2	EPP/IP - 6.1				In Envelope
Flashlights (& spare batteries)*	2					*
Watch	1					
Air sampler - DC	1					Note: (1)
Air sampler filters	50					
Air sampler charcoal cartridges	10					
Silver Zeolite cartridges	12					
Potassium Iodide Tablets	10 Bottles			**		**Note Expiration Date
Laminated Survey Route Maps	2 (MIN)					
Envelope of Tags/Stationary	1					Inventory on Envelope
Radio Antenna	1					
Polyethylene bags	20					
Rolls of tuck tape	1					
Raincoats and caps	2					
Anti C's						
coveralls	2 pr.					
shoe covers	4 pr.					
gloves	4 pr.					
head covers	2					
Respirators and cartridges	At Least 2					Note: (2)

*Replace batteries with new ones each quarterly check and verify operability.

NOTES: (1) Air Sampler: Check operability of Sampler by hooking up to the battery from the Radcon Emergency Air Sample Carts. Connect Sampler to Battery for verification of Operability. Note flow rate in "Remarks" section. Connect charge to battery for charging when complete.

(2) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken or if expiration date within next 3 months.

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./EPP Section	Calib. Due Date/Rev. No.	Dated	Rad Con Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - EMERGENCY CABINET NO. 3

Emergency Squad Radiological Control Equipment
Location: Controlled Area Hallway

Item/ Equipment	Quantity ( )	Serial No.	Issue/ Rev. No.	Calib. Due Date	Available/ Operable	Remarks
First Aid Kits	2					
MSA Air Packs	5 (min)	Located on Chem Lab Wall				*Check Air Cylinder Pressure >2000 psig
Breathing Air Cylinders	5 (min)	Located on Chem Lab Wall				*Check Air Cylinder Pressure >2000 psig
Potassium Iodide Tablets	1 box			**		**Note Expiration Date
Emergency Blankets	3					
Anti-C Coveralls	5 pr.					
Cloth gloves	5 pr.					
Rubber gloves	5 pr.					
Rubber boots	5 pr.					
Shoe Covers	5 pr					
Hoods	5					
Raincoats	5					
Respirators and Cartridges	At least 5					Note: (1)
Flashlight (+ Spare Batteries)*	3					*
Ice Packs	6					
Rescue Rope ~200 Ft. - 1/2"	1					
Dosimeter Charger & Battery *	1					*
Splints (Wood)	6 sets					
Air Splints	6					

*Replace batteries with new ones each quarterly check and verify operable.

NOTE: (1) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken or if expiration date within next 3 months.

Inventory Conducted by: ______________________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./ EPP Section	Calib. Due Date/Rev. No.	Dated	Rad Con Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - MONITORING KITS

Inventory for Monitoring Kit 3
Location: Emergency Squad Cabinet No. 3(Controlled Area Hallway)

Item/Equipment	Quantity (✓)	Serial No./ EPP Section	Issue / Rev. No.	Calibration Due Date	Available/ Operable	Remarks
G.M. survey inst. E140, Probe HP-210	1 ea					
G.M. survey inst. E530, Probe HP-260	1 ea					Or Equivalent
Survey Inst. - Ion Chamber	1					Or Equivalent
Self-reading dosimeters (0-500 mrem)	2					
BVPS-EPP Implementing Procedures Dose Assessment Section	2	EPP/IP-2 series				Rezero, if necessary; In Envelope
Re-entry to Affected Area procedure	2	EPP/IP - 6.1				
Flashlights (& spare batteries) *	2					In Envelope
Watch	1					*
Air sampler - AC	1					
Air sampler filters	50					Note: (1)
Air sampler charcoal cartridges	10					
Silver Zeolite cartridges	12					
Potassium Iodide Tablets	10 bottles			**		
Envelope of Tags/Stationary						**Note Expiration Date
Respirators and cartridges	At Least 2					Inventory on Envelope
Pencils (sharpened)	12					Note: (2)
Polyethylene bags	20					
Rolls of tuck tape	1					
Raincoats and caps	2					
Anti-C's						
coveralls	2 pr.					
shoe covers	4 pr.					
gloves	4 pr.					
head covers	2					
Laminated Survey Route Maps	2 (MIN.)					

*Replace batteries with new ones each quarterly check and verify operable.

NOTES: (1) Air Sampler: AC Power Supply Unit Air Sampler should be plugged into the nearest AC outlet and checked for verification of Operability. Note flow rate in "Remarks" section.

(2) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken of if expiration date within next 3 months.

Inventory Conducted By: ______________________ Date: __________
Rad Tech

Reviewed By: ______________________ Date: __________
Rad Con Foreman

Follow-Up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./ EPP Section	Calib. Due Date/Rev. No.	Dated	Rad Con Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Rad Con Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - EMERGENCY CABINET (DESK) NO. 4

Alternate Emergency Operations Facility
Location: South Heights T + D Building (Main Office Area; Desk)

Item/ Equipment	Quantity (✓)	Serial No./ EPP Section	Issue / Rev. No.	Calib. Due Date	Available/ Operable	Remarks
BVPS EPP (Control Copy No. 4)	1	Vol I (EPP)				In Desk
		Vol II (EPP)				In Desk
Radio Console	1					
Hi-Bank Walkie-Talkie Radios	2					*
Laminated Survey Route Maps	2 (MIN)					
Envelope of Stationary Supplies	1					Inventory on Envelope
EPP-IP's; Dose Assessment Sec.		EPP/IP 2-Series				
Potassium Iodine-Tables	1 Box					** Note Expiration I
Geodetic Survey map-10 mile EPZ	1	(Wall Mounted)				

NOTE: Keys to desk and Cabinet No. 4 are located in call box, located on desk.

*Walkie-Talkie Radios are located in emergency cabinet; radios should be plugged in and put into charge mode. Instructions are taped on desk.

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No. EPP Section	Calib Due Date/Rev. No	Dated	RadCon Fore:

When all items have been replaced and all deficiencies corrected, send one copy to Rad Con Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - MONITORING KITS

Inventory for Monitoring Kit 4
Location: Alternate EOF (South Heights T & D Bldg.)

Item/Equipment	Quantity ( )	Serial No./ EPP Section	Issue / Rev. No.	Calibration Due Date	Available/ Operable	Remarks
G.M. survey inst. E140, Probe HP-210	1 ea					Or Equivalent
G.M. survey inst. E530, Probe HP-240	1 ea					Or Equivalent
Survey Inst. - Ion Chamber	1					
Dosimeters (0-500 mrem) / (0-5R	2/2					Rezero, if necessary
BVPS EPP-Implementing Procedures Dose Assessment Section	2	EPP/IP-2 series				In Envelope
Re-entry to Affected Areas procedure	2	EPP/IP - 6.1				In Envelope
Flashlights (4 spare batteries)*	2					*
Watch	1					
Air sampler - DC	1					Note: (1)
Air sampler filters	50					
Air sampler charcoal cartridges	10					
Silver Zeolite cartridges	12					
Laminated Survey Route Maps	2 (MIN)					
Potassium Iodide Tablets	10 bottles			**		**Note Expiration Date
Envelope of Tags/Stationary	1					Inventory on Envelope
Dosimeters (0-5R) / (0-10R)	10/10					
Polyethylene bags	20					
Rolls of tuck tape	1					
Tags	30					
Anti-C's						
coveralls	2 pr.					
shoe covers	4 pr.					
gloves	4 pr.					
head covers	2					
Respirators and cartridges	At least 2					Note: (2)
Raincoats and caps	2					
Dosimeter Charger + Batteries	1					

*Replace batteries with new ones each quarterly check and verify operable.

NOTES: (1) Air Sampler: Connect unit up to car battery for operability verification. Note flow rate in "Remarks" section.
(2) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken or if expiration date within next 3 months.

Inventory Conducted by: ______________________ Date: ______________
Rad Tech

Reviewed by: ______________________ Date: ______________
Rad Con Foreman

Follow-up Action Taken: ____

Item Replaced	Replaced By	Serial No./EPP Section	Calib. Due Date/Rev No.	Dated	Rad Con Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - MONITORING KITS

Inventory for Monitoring Kit 5
Location: Alternate EOF (South Heights, T & D Bldg)

Item/Equipment	Quantity (✓)	Serial No./ EPP Section	Issue / Rev. No.	Calibration Due Date	Available/ Operable	Remarks
G.M. survey inst. E140, Probe HP-210	1 ea					
G.M. survey inst. E530, Probe HP-240	1 ea.					Or Equivalent
Survey Inst. - Ion Chamber	1					Or Equivalent
Self-reading dosimeters (0-500 mrem)	2					
BVPS-EPP Implementing Procedures Dose Assessment Section	2	EPP/IP-2 series				Rezero, if necessary
Re-entry to Affected Areas procedure	2	EPP/IP - 6.1				
Flashlights (& spare batteries)*	2					*
Watch	1					
Air sampler - DC	1					Note: (1)
Air sampler filters	50					
Air sampler charcoal cartridges	10					
Silver Zeolite cartridges	12					
Potassium Iodide Tablets	10 bottles			**		**Note Expiration Date
Laminated Survey Route Maps	2 (MIN)					
Envelope of Tags/Stationary	1					Inventory on Envelope
Polyethylene bags	20					
Rolls of tuck tape	1					
Anti-C's						
coveralls	2 pr.					
shoe covers	4 pr.					
gloves	4 pr.					
head covers	2					
Respirators and cartridges	At least 2					
Raincoats and caps	2					Note: (2)

*Replace batteries with new ones each quarterly check and verify operable.

NOTES: (1) Air Sampler: Connect unit up to car battery for operability verification. Note flow rate in "Remarks" section.
(2) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken or if expiration date within next 3 months.

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced by	Serial No./EPP Section	Calib Due Date/Rev. No.	Dated	Rad Con Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - FIRST AID ROOM

Location: Turbine Bldg. Elev. 735, near Elevator

Item/ Equipment	Quantity (✓)	Serial No.	Issue / Rev. No.	Calib. Due Date	Available/ Operable	Remarks
Roll of Blotting Paper	50 Ft.	X	X	X		
Large Yellow Poly Bags	10	X	X	X		
Small Yellow Poly Bags	20	X	X	X		
Anit-C's Coveralls	5 pr	X	X	X		
Shoe covers	10 pr	X	X	X		
Gloves (cloth & rubber)	10 pr	X	X	X		
Head covers	4	X	X	X		
Respirators	At least 5	X	X	X		Note (1)
Lead Blankets	3	X	X	X		
Roll Tuck Tape	1	X	X	X		
Dosimeters	5		X			Rezero, if necessary

NOTE: (1) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken or if expiration date within next 3 months.

Inventory Conducted by: ______________________ Date: ________
Rad Tech

Reviewed by: ______________________ Date: ________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./ EPP Section	Calib Due Date/Rev No.	Dated	RadCon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy to responsible EPP Supervisor. Transfer original to Office Records File.

INVENTORY CHECKLIST - CONSTRUCTION ASSEMBLY AREA

Location: Service Group Trailer Complex
Training Trailer (Trailer City)

Item/ Equipment	Quantity ( )	Serial No.	Issue / Rev. No.	Calib. Due Date	Available/ Operable	Remarks
Air Sampler (AC) w/Spare Sample head	1					Note (1)
Air Sampler Filters	50					
Air Sampler Charcoal Cartridge	10					
Silver Zeolite Cartridges	12					
Dosimeters	4					Rezero, if necessary
Dosimeter Charger + Battery *	1					*
Emergency Plan for Construction Personnel	2 copies	EPP/IP - 3.1.1				
Envelope of Stationary Supplies	1					Inventory on Envelope
Megaphone	1					
Flashlight (+ Spare Batteries)*	3					*
First Aid Kit	1					

*Replace batteries with new ones each quarterly check and verify operable.

NOTE: (1) Air Sampler: AC Power Supply Unit should be plugged into nearest AC outlet and checked for operability. Note flow rate in Remarks column.

Inventory Conducted by: ______________________________ Date: ____________
Rad Tech

Reviewed by: ______________________________ Date: ____________
Rad Con Foreman

Follow-up Action Taken: ______________________________

Item Replaced	Replaced By	Serial No./ EPP Section	Calib. Due Date/Rev No.	Dated	RadCon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - SCHNEIDER SUPERVISORY ASSEMBLY AREA .

Location: DLC-CDN/Schneider Supervisory Trailer Complex (Trailer City)

Item/ Equipment	Quantity ( )	Serial No.	Issue/ Rev. No.	Calib. Due Date	Avail./ Operable	Remarks
Air Sampler (AC) w/Spare Sample head	1					Note (1)
Air Sampler Filters	50					
Air Sampler Charcoal Cartridge	10					
Silver Zeolite Cartridges	12					
Dosimeters	4					Rezero, if necessary
Dosimeter Charger + Battery *						*
Emergency Plan for Construction Personnel	2 copies	EPP/IP - 3.1.1				
Envelope of Stationary Supplies	1					Inventory on Envelope
First Aid Kit	1					
Flashlight (+ Spare Batteries)*	3					*

*Replace batteries with new ones each quarterly check and verify operable.

NOTE: (1) Air Sampler: AC Power Supply Unit should be plugged into nearest AC outlet and checked for operability. Note flow rate in "Remarks" column.

Inventory Conducted by:____________________ Date:__________
Rad Tech

Reviewed by:____________________ Date:__________
Rad Con Foreman

Follow-up Action Taken:____________________

Item Replaced	Replaced By	Serial No./ EPP Section	Calib. Due Date/Rev. No.	Dated	Radcon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Radcon Supervisor and one copy to responsible EPP Supervisor.

INVENTORY CHECKLIST - EIC Warehouse

Location: West of Shippingport Power Station

Item/ Equipment	Quantity ( )	Serial No.	Issue / Rev. No.	Calib. Due Date	Available/ Operable	Remarks
Air Sampler (D.C.) w/Spare Sample Head	1					Note (1)
12 Volt Battery w/Charger	1					
Air Sampler Filters	50					
Air Sampler Charcoal Cartridge	10					
Silver Zeolite Cartridges	12					
Dosimeters	4					Rezero, if necessary
Dosimeter Charger + Battery *	1					*
Emergency Plan for Construction Personnel	2 Copies	EPP/IP-3.1.1				
Envelope of Stationary Supplies						Inventory on Envelope
Flashlight (+ Spare Batteries) *	3					*
First Aid Kit	1					

*Replace batteries with new ones each quarterly check and verify operable.

NOTE: (1) Air Sampler: AC Power Supply Unit should be plugged into nearest AC outlet and checked for operability. Note flow rate in "Remarks" column.

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./ EPP Section	Calib. Due Date/Rev No.	Dated	RadCon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - ADMINISTRATION BLDG. ASSEMBLY AREA

Location: New Administration Building (basement floor)
Supply Cart (Located in Electrical Equipment Room: Key A-7 or Master)

Item/ Equipment	Quantity ( )	Serial No.	Issue/ Rev. No.	Calib. Due Date	Available/ Operable	Remarks
RM 14 or equivalent (w/HP-210 Probe	1					
Survey Inst-Ion Chamber	1					
Pot. Iodide Tablets	1 box					
Air Sampler(AC&DC) w/Spare Sample head	1					
Air Sampler Filters	50					Note (1)
Air Sampler Charcoal Cartridge	10					
Silver Zeolite Cartridges	12					
Dosimeters	4					Rezero, if necessary
Dosimeter Charger + Battery *	1					
Emergency Plan For Admin. Bldg. Personnel	2 copies	EPP/IP-3.1.3				*
Envelope of Stationary Supplies	1					Inventory on Envelope
Flashlight (+ Spar Batteries)*	3					*

*Replace batteries with new ones each quarterly check and verify operable.

NOTE: (1) DC Air Sampler: DC Battery Power Supply located in Admin. Bldg. Communication Battery Room on Cart. Connect Sampler to Battery for verification of Operability. Note flow rate in "Remarks" section. Connect charge to battery for charging when complete.

(2) AC Air Sampler: AC Power Supply unit should be plugged into nearest AC outlet and not flow rate in "Remarks" section.

Inventory Conducted by: ______________________ Date: ____________
Rad Tech

Reviewed by: ______________________ Date: ____________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./ EPP Section	Calib. Due Date/Rev No.	Dated	Radcon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Rad Con Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - TECHANICAL SUPPORT CENTER
Location: New Administration Bldg. (Basement; TV Monitor Area)
(See General Office for key No. ES-202)

Item/ Equipment	Quantity ( )	Serial No.	Issue/ Rev. No.	Available/ Operable	Remarks
BVPS EPP Control Copy #1	1	Vol I (EPP)			
	1	Vol II (IP)			
BVPS Tech. Spec. Book	1				
DLC Drawing Records	1	Vol I & II			
DLC/BVPS Phone List Book	1				
TV Monitors					
Camera Controls (TX - 1, 2 & 3)	3				
Videocassette Recorders (w/spare Tapes 3/4")	3				
Radio Console	1				
Bell Phone Books (Pitts. & Beaver County)	1				
Emergency Headsets and Handset Phones	2				
Stapler (w/extra box staples)	1				
Clipboards	4				
Log Books	3				
Status Boards	5				
Flourescent Lantern	1				
Pater-Graph/Lined	12 (MIN)				
Stationary Supplies	1 BOX				Inventory in Box
Envelope of Forms	3.				Inventory on Envelopes
Potassium Iodide Tablets	1 box				**Note Expiration Date ____
Geodetic Survey Map (10 mile EPZ)	1	(Wall Mounted)			
Laminated Survey Route Maps	2 (MIN).				

Inventory Conducted by ____________ ____________ Date: ____________
Rad Tech

Reviewed by: ________________________ Date: ____________
Rad Con Foreman

Follow-up Action Taken: ________________________

Item Replaced	Replaced By	Serial No. EPP Section	Calib Due Date/Rev. No	Dated	RadCon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - EA AND DP ROOM
Location: New Administrative Bldg.: (Basement)

Item/ Equipment	Quantity ( )	Serial No.	Issue/ Rev. No.	Available/ Operable	Remarks
BVPS EPP Control Copy #8	1	Vol I (EPP)			In Cabinet
		Vol II (IP)			In Cabinet
Emergency Headset and Handset Phones	1				In Cabinet
Flourescant Latern	1				In Cabinet
Hand Calculator	1				In Cabinet
Environmental Sampling Binder	1				In Cabinet
Dose Assessment Procedures & Forms	1				In Binder
Dose Evaluation Aid	2				(In Envelopes)
Potassium Iodide Tablets	1 Box				**Note Expiration Date
DLC Phone Book	1				(In Envelopes)
Clipboards	3				(In Envelopes)
Meteorological Overlays	1 Set				(In Envelopes)
Stapler (w/extra box staples)	1				(In Envelopes)
Paper-Polar Graph and Lines	12 (MIN.)				
Envelope of Stationary Supplies	1				Inventory on Envelope
DLC Memo call pads	6				
BVPS Site Map	1				On Board
Survey Route Maps	3				
Geodetic Survey Map (10 mile EPZ)	1	(Wall Mounted)			

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No. EPP Section	Calib Due Date/Rev. No.	Date	RadCon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - EMERGENCY OPERATIONS FACILITY (INTERIM)

Location: New Administration Bldg. (Basement)

Item/ Equipment	Quantity ( )	Serial No.	Issue/ Rev. No.	Available/ Operable	Remarks
BVPS EPP Control Copy #9	1	Vol I (EPP)			On Bookshelf
		Vol II (IP's)			
Copy of Beaver County Plan	1				*
Copy of Pennsylvania State Plan (Annex E)	1				*
Copy of Columbiana County Plan	1				*
Copy of Ohio State Plan	1				*
Copy of Hancock County Plan	1				*
Copy of State of West Virginia Plan	1				*
SAPS Emergency Plan	1				*
Bell Phone Books (Pitts. & Beaver County)	1				
Clipboards	3				
Envelope of Stationary Supplies	1				Inventory of Envelope
Stapler (w/extra box staples)	1				
Flourescent Latern	1				
Envelope of Forms	1				Inventory of Envelope
Emergency Handset/ Handset Phones	2 (MIN.)				
Status Boards					In Coat Rack Area
Laminated Survey Map	1				
Geodetic Survey Map (10 mile EPZ)	1	(Wall Mounted)			In Hallway

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No. EPP Section	Calib Due Date/Rev. No	Date	RadCon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - OPERATIONS SUPPORT CENTER CABINET

Location: Emergency Shutdown Panel Area (Process Inst. Room)

Item/Equipment	Quantity ( )	Serial No.	Calibration Due Date	Available/ Operable	Remarks
Survey Inst.-Ion Chamber	1				
E-140 or equivalent	1				
Air Sampler - AC w/Spare Sample head	1				Note: (1)
Dosimeter Charger	1				
Dosimeters	20 (min)				
TLD's (Extremity Sets)	10 sets of 4				
Flashlights (w/batteries)	2				*
Anti C's					
coveralls	12				
hoods	12				
rubber gloves	12 pair				
cotton gloves	12 pair				
shoe covers	12 pair				
Respirators (w/GMR Canister Respirators	12				Note: (2)
Cartridges-silver zeolite	20				
Cartridges - CESCO	10 boxes				
Filters	5 boxes				
Clear Sample Bags	12				
Yellow Sample Bags	12				
Tuck Tape	2 rolls				
Extension Cord	1				
A.C. Adaptors	2				
Emergency Phone List	1				
Clipboards	2				
Envelope of Supplies	1				Inventory on Envelope
Radioactive material tape	3 rolls				
Contaminated material tape	3 rolls				
Envelope of Signs	1				Inventory on Envelope
Emergency Headset Headset Phones	4				
Pre-made Step-off pads	2				
Dosimeter & Monitoring Badge Required signs	6				
Controlled Area signs	15				

(Continued on next page)

*Replace batteries with new ones each quarterly check and verify operable.

NOTES: (1) Air Sampler: AC Power Supply Unit should be plugged into the nearest AC outlet and checked for operability Note flow rate in the "Remarks" section.

(2) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken or if expriation date within next 3 months.

INVENTORY CHECKLIST - OPERATIONS SUPPORT CENTER CABINET

Location: Emergency Shutdown Panel Area (Process Inst. Room) (continued)

Item/Equipment	Quantity ( )	Serial No.	Calibration Due Date	Available/ Operable	Remarks
Yellow poly bags	12				
Green poly bags	6				
Radiation Barrier tape	2 rolls				
Radiation Barrier ribbon	2 rolls				
Bell Telephone	1				
Disposable gloves	1 pair				
Survey map	1				
Potassium Iodide Tablets	1 box		**	**Note: Expiration Date	

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./EPP Section	Calib. Due Date/Rev. No.	Date	Rad Con Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Rad Con Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - RADIOLOGICAL EMERGENCY VAN

Item/Equipment	Quantity	Serial No.	Calibration Due Date	Available/ Operable	Remarks
BVPS-EPP Implementing Procedure (Doua Ass. Section)	4	Section 2 Series	Issue Rev.		
BVPS-EPP Implementing Procedure (Re-entry Procedure)	4	IP 6.1	Issue Rev.		
Folder of Instruction	1				
Instructions for ND 66 and Associated Equip.	1				
Liquid Nitrogen Refrigerator	1				
Green Poly Bags 12" x 24"	38				
Plastic Bags (clear) 6" x3"	200				
Germanium Detector	1	3053			
Portable Generator 3500 WATT W/Restraning Straps (2)	1	4481			
Gasoline Generator 500 WATT Honda	1	93174410			
ND-66 Nuclear Data Computer	1	4484			
Silent 700 Printer	1	4492			
Computer Aid Digital Data Recorder	1	4515			
Computer Cassette Tape/ Educating Speed Tape	5/1				
Alcoa Clear Wrap 1000 Ft.x 18" Roll	1				
Liquid Propane Instrument Gas Bottles (6 oz)	5				
Printer Paper (Rolls)	5				
RO 2A Ion Chamber	1				
E140 N/HP 210 Probe	1				Or Equivalent
E530/HP 270 Probe	1				Or Equivalent
PAC-4G/AC-21 Probe (Alpha)	1				Or Equivalent
Potassium Iodide Tablets	10 Bottles				** Note Expiration Date
Respirators & Cartridges	2				Note: (1)
Radeco Air Sampler (D.C.) & (A.C.)	1 each				Note: (2)
Liter Bottle	50				Note: (2)
Filter Paper	2 Boxes				
Cesco Cartridges	10 Boxes				
Zeolite Cartridges	10	BN-4			

NOTES: (1) Respirators: For each respirator, check that the seal on cartridge is unbroken. Record expiration dates above. Replace any unit that has been used or appears damaged, any cartridge with seal broken, or if expiration date is within next three months.

(2) DC Air Sampler: Connect unit up to car battery for verification of Operability. Note flow rate in "Remarks" section.

AC Air Sampler: AC Power Supply unit should be plugged into nearest AC outlet and note flow rate in "Remarks"

INVENTORY CHECKLIST - RADIOLOGICAL EMERGENCY VAN (continued)

Item/Equipment	Quantity	Serial No.	Calibration Due Date	Available/ Operable	Remarks
Envelope of Stationary Supplies	1				Inventory on Envelope
Fire Extinguisher	1				
Tool Kit	1				
Tuck Tape (Roll)	1				
Eye Wash Neutralizing Bottle	1				
Gasoline Can (1 Gallon)	1				
Funnel and Hose	1				
Grounding Rod	1				
Heavy Duty Extension Cord	1				
Light Extension Cord	3				
Tygon Hose (6 Ft)	1				
Spare Spark Plug	1				
Horse Hide Gloves	1 pair				
Heavy Duty Gloves	1 pair				
Flash Lights (w/Batteries)	2 *				
Motorola Transceiver with Microphone	1				
Highway Warning Devices (Reflectors)	1 box				
Chair with Restraining Strap	1				
12 Volt Battery	1				
Electrical Outlet Adapters	2				
Syphon Pump	1				
Laminated Survey Route Maps	2 (MIN.)				

*Replace batteries with new ones each quarterly check and verify operable.

Inventory Conducted by: ______________________ Date: ____________
Rad Tech

Reviewed by: ______________________ Date: ____________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced By	Serial No./EPP Section	Calib. Due Date/Rev. No.	Date	Rad con Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Radcon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - EPP AIR SAMPLE CART

* Cart No._____ (Min. of 2)
Location: Turbine 735 Elev.

Item/Equipment	Quantity	Serial No.	Calibration Due Date	Available/ Operable	Remarks
Coveralls	2				
Plastic Suits	2				
Anti C's					
shoe covers	2 pair				
rubber gloves	2 pair				
cloth gloves	2 pair				
hoods	2				
Air Sampler - DC	1				Note: (1)
Respirators (w/GMC Canister)	2				Note: (2)
Survey Inst. - Ion chamber	1				
Battery (12 Volt) / Charger	1/1				
Dosimeter (0-5R)	1				
RM-14 or equivalent (w/HP-210 Probe)	1				
Spare Air Sampler Head	1				
Cartridges - CESCO	10/box - 1 box				
Cartridges - silver zeolite	20				
Filters	100/box - 2 boxes				
Clear Sample Bags	24				
Potassium Iodide Tablets	10 bottles				** Note Expiration Date
Stationary Supplies	1 Envelope				Inventory on Envelope
Laminated Survey Route Map	1				
Green poly bags - 12" x 18"	4				
Yellow poly bags - 12" x 8"	4				
Tuck Tape	1 roll				
Flashlight w/Batteries	1				
Site Survey Maps	1 set				In Envelope
Disposable Gloves	1 box				

*A minimum of two (2) Carts shall be maintained available/operable at all times. Two of these forms shall be filled out, whenever applicable.

NOTES: (1) Air Sampler: Connect Sampler to Battery for verification of Operability. Note flow rate in "Remarks section. Connect charge to battery for recharging when complete.

(2) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken or if expiration date within next 3 months.

Inventory Conducted by: ____________________ Date: ________
Rad Tech

Reviewed by: ____________________ Date: ________
Rad Con Foreman

Follow-up Action Taken: ____________________

Item Replaced	Replaced By	Serial No./EPP Section	Calib. Due Date/Rev. No.	Dated	Radcon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - EPP AIR SAMPLE CART

* Cart No. _____ (Min. of 2)
Location: Turbine 735 Elev.

Item/Equipment	Quantity	Serial No.	Calibration Due Date	Available/ Operable	Remarks
Coveralls	2				
Plastic Suits	2				
Anti C's					
shoe covers	2 pair				
rubber gloves	2 pair				
cloth gloves	2 pair				
hoods	2				
Air Sampler - DC	1				
Respirators (w/GMR Canister)	2				Note: (1)
Survey Inst. - Ion chamber	1				Note: (2)
Battery (12 Volt) / Charger	1/1				
Dosimeter (0-5R)	1				
RM-14 or equivalent (w/HP-210 Probe)	1				
Spare Air Sampler Head	1				
Cartridges - CESCO	10/box - 1 box				
Cartridges - silver zeolite	20				
Filters	100/box - 2 boxes				
Clear Sample Bags	24				
Potassium Iodide Tablets	10 Bottles				
Stationary Supplies	1 Envelope				**Note Expiration Date
Laminated Survey Route Map	1				Inventory on Envelope
Green poly bags - 12" x 18"	4				
Yellow poly bags - 12" x 8"	4				
Tuck Tape	1 roll				
Flashlight w/Batteries	1				
Site Survey Maps	1 set				In Envelope
Disposable Gloves	1 box				

*A minimum of two (2) Carts shall be maintained available/operable at all times. Two of these forms shall be filled out, whenever applicable.

NOTES: (1) Air Sampler: Connect Sampler to Battery for verification of Operability. Note flow rate in "Remarks section. Connect charger to battery for recharging when complete.

(2) Respirators: For each respirator in Cabinet, check that seal on cartridge is unbroken. Record number of units and expiration dates above. Replace any unit that has been used or appears damaged, any cartridge that has seal broken or if expiration date within next 3 months.

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Rad Con Foreman

Follow-up Action Taken: ______________________

Item Replaced	Replaced by	Serial No./EPP Section	Calib. Due Date/Rev. No.	Dated	Radcon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to RadCon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - PERSONNEL DECONTAMINATION KIT #4

Location: Decon. Shower Room

Item	Quantity	Expiration Date*	Available	Remarks
Decon. Procedure (REOP - 3.1)	1	New Revision		
Forms (RCM - 5.12)	100	New Revision		
Bar Soap/Shampoo	1 each			
50/50 Solution	1 liter			
Betadine	1 liter	3/84		
Sulfuric Acid	2 liter	1/84		.2 NH_2 SO_4
Potassium Permanganate	2 liter	1/84		
Deionized Water	2 liter			
Sodium Bisulfate	2 bottles			40.g each
Hand Lotion	1			
Boraxo Powder	1			
Gauze Pads	35			4" x 4"
Adhesive Tape	3 rolls			
Surgical Scrub Brush	3			
Scissors	2			
Markers/Pens	1 each			
Q-tips	100			
Mixing Cups	5			
Tuck Tape	1 roll			
NuCon Smears	1 box			

Inventory Conducted by: ______________________ Date: ____________
Rad Tech

Reviewed by: ______________________ Date: ____________
Radcon Foreman

Action Taken: ______________________

Item Replaced	Replaced By	Date	Radcon Foreman

When all items have been replaced and all duficiencies corrected, send one copy to Radcon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - PERSONNEL DECONTAMINATION KIT #4 (cont.)

Location: Decon. Shower Room

Item	Quantity	Expiration Date*	Available	Remarks
Whirl-Paks	1 bundle			
Control Zone Tape	1 roll			
Contaminated Material Tape	1 roll			
Diapers				
Jumpsuits	2			In Laundry Room
Hoods	2			In Laundry Room
Rubber Boots	4 pair			"
Glove Liners	1 bundle			"
Tyvek Jumpsuits	10 pair			"
Paper Jumpsuits	12 pair			"
Vinyl Gloves	100			"

*NOTE: All items used from kit are to be replaced ASAP with either new or cleaned and contamination-free used materials.

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Radcon Foreman

Action Taken: ______________________

Item Replace	Replaced By	Date	Radcon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Radcon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - PERSONNEL DECONTAMINATION KIT

Kit # _____ (Min. of 1)
Location: First Aid Room

Item	Quantity	Expiration Date*	Available	Remarks
Decon. Procedure (REOP - 3.1)	1	New Revision		
Forms (RCM - 5.12)	100	New Revision		
Bar Soap/Shampoo	1 each			
50/50 Solution	1 liter			
Betadine	1 liter	3/84		
Sulfuric Acid	2 liter	1/84		$.2\ NH_2\ SO_4$
Potassium Permanganate	2 liter	1/84		
Deionized Water	2 liter			
Sodium Bisulfate	2 bottles			40.g each
Hand Lotion	1			
Boraxo Powder	1			
Rinse Water	1 gal.			
Rinse Basin	1			
Gauze Pads	35			4" x 4"
Adhesive Tape	3 rolls			
Surgical Scrub Brush	3			
Scissors	2			
Markers/Pens	1 each			
Q-tips	100			
Mixing Cups	5			
Tuck Tape	1 roll			
NuCon Smears	1 box			
Whirl-Paks	1 bundle			
Control Zone Tape	1 roll			
Contaminated Material Tape	1 roll			

Inventory Conducted by: ______________________ Date ________
Rad Tech

Reviewed by: ______________________ Date: ________
Radcon Foreman

Action Taken: ______________________

Item Replaced	Replaced By	Date	Radcon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Radcon Supervisor and one copy and original to responsible EPP Supervisor.

INVENTORY CHECKLIST - PERSONNEL DECONTAMINATION KIT (cont.)

Kit #_____ (Min. of 1)
Location: First Aid Room

Item	Quantity	Expiration Date*	Available	Remarks
Large Bags	5			
Diapers	5			
Jumpsuits	2			
Hoods	2			
Rubber Boots	4 pair			
Glove Liners	1 bundle			
Tyvek Jumpsuits	10 pair			
Paper Jumpsuits	12 pair			X-Large
Vinyl Gloves	100			Large

*NOTE: All items used from kit are to be replaced ASAP with either new or cleaned and contamination-free used materials.

Inventory Conducted by: ______________________ Date: __________
Rad Tech

Reviewed by: ______________________ Date: __________
Radcon Foreman

Action Taken: ______________________

Item Replaced	Replaced By	Date	Radcon Foreman

When all items have been replaced and all deficiencies corrected, send one copy to Radcon Supervisor and one copy and original to responsible EPP Supervisor.

ADMINISTRATION OF EMERGENCY PREPAREDNESS PLAN DRILLS AND EXERCISES

A. OBJECTIVE

The purpose of this procedure is to assure a high level of emergency preparedness of Station personnel and offsite response agencies, through the efficient administration of periodic drills and exercises. This procedure provides guidance on the scheduling, preparation, performance, observation, and critique of emergency drills and exercises.

Offsite response groups have Federally-mandated periodic drill and exercise requirements which may often have to be interfaced with the provisions of this procedure.

The Emergency Planning Supervisor is responsible for planning, scheduling and coordinating all emergency planning-related exercises. The Operations Supervisor is responsible for planning, scheduling, and coordinating all Emergency Squad-related drills. The Supervisor, Nuclear Training will assist the Emergency Planning Supervisor and the Operations Supervisor in carrying out these responsibilities. All exercises are subject to the review and approval of the Manager, Nuclear Safety & Licensing.

B. PREREQUISITES/INITIAL CONDITIONS

1. Drill/exercise preparations as outlined in Attachment 1, "Drill/Exercise Check-list" have been completed prior to initiation of the drill/exercise.
2. Personnel praticipating in the drill/exercise have been appropriately indoctrinated in their assigned functions/roled.

C. PRECAUTIONS

1. When contacting any organization or individual during an exercise or drill, emphasize, that a drill/exercise is in progress, and that there is not an actual situation. All announcements on the page system should be prefaced and ended with the words"...This is a drill (exercise)......"

2. Some of the emergency implenting procedures and the emergency operating procedures (OM, Chapter 53) may prescribe steps which would require shutdown, such as air damper operations, valve operations, or reactor scram. Drill/exercise observers and participants should be briefed that the actual steps will not be performed, but should be simulated by the applicable personnel. To the extent possible, such simulation should include all actions, up to actually performing the operation. (For example, proceeding to an area, suiting up in respirators/protective clothing, entering the area, but not operating the valve, etc.) For some drills/exercises, the Emergency Planning Supervisor may decide that safety observers at certain control stations are warranted, to prevent inadvertent operations.

D. GUIDANCE AND CRITERIA

1. Definitions

1.1 Exercises are realistic, pre-planned simulations of accidents, designed and conducted in such a manner that the response of the emergency organization, and other Station personnel closely approximates the response to an actual incident, and involves applicable portions of the offsite emergency organizations.

1.2 Drills are pre-planned simulations in which the participants are "walked-through" or "talked-through" one or more procedures, or aspects of the Emergency Preparedness Plan. The primary purpose of drills is to provide individuals with hands-on training in a controlled situation.

NOTE

The response of Station personnel to an actual emergency condition may be allowed to satisfy a particular drill requirement, provided that critique is performed and documented in the manner specified for a drill

2. Exercise Scheduling

2.1 An exercise appropriate to a Site or General Emergency, and which simulates conditions resulting in offsite radiological releases which would require protective response by offsite authorities shall be conducted at least once per calendar year for the Beaver Valley Power Station. This exercise shall test the integrated capability and a major portion of the basic elements of the Emergency Preparedness Plan. The scenario will be varied from year to year such that all major elements of the Plan and the emergency organizations are tested within a five-year period. Consistent with the ability of offsite agencies to participate, this exercise should be scheduled to commence between the hours of 1800 and 2400, and between 0000 and 0600 once every six years.

2.2 This exercise will normally involve participation by one or more offsite emergency response organizations to some extent annually. The State and local organizations participate in exercises as described in 10 CFR 50 Appendix E. As interpreted currently for the Beaver Valley Power Station, the Commonwealth of Pennsylvania should participate in a full-scale exercise at BVPS at least once every three years, alternating between other facilities, as will the State of Ohio. The State of West Virginia should participate in a full-scale exercise with BVPS annually.

2.3 Local goverment agencies will participate in the full-scale exercise with their respective State. In years between State involvement in the annual exercise, the local goverments in these states will participate in a smaller scale exercise which involves testing communication links and a least one other aspect of their emergency plan.

2.4 Federal agencies may participate at least once every five years in an exercise at BVPS.

2.5 Participation of the general public in exercises pursuent to this part is not mandatory.

2.6 Each exercise will be observed and critiqued by qualified observers from Federal State and/or local goverments. A formal evaluation will result from these critiques.

3. Drill Scheduling

3.1 Fire Emergency Drills

3.1.1 Each fire brigade member will participate in at least two fire drills per year.

3.1.2 At least one drill in the calendar year shall involve the participation of a local offsite fire department.

3.2 Medical Emergency Drill

At least one drill per calendar year shall be conducted. The drill will involve the participation of some, if not all, of the local medical support personnel and organizations (eg., physicians, ambulance service, hospital, etc.) and may involve cases of contaminated/injured personnel and/or possible radiation overexposure. The offsite portions of the medical emergency drill may be included in the scenario for the annual radiation emergency exercise.

3.3 Radiation Emergency Drills

3.3.1 At least one drill involving collection and analysis of radiological sample media (eg., water and air) both onsite and offsite shall be conducted annually. This drill should include record keeping and communications.

3.3.2 Drills involving response to simulated abnormal airborne samples and/or direct radiation measurements in the site environs, and as appropriate, analysis of these samples, shall be conducted semi-annually.

3.3.1 Drills involving analysis and sampling of in-plant liquids using post-accident sampling procedures and liquids with actual elevated (eg: normal primary coolant) radiation levels shall be conducted annually for Chemistry personnel.

3.4 Communications Drills

Communication links between the Beaver Valley Power Station and the primary emergency response agencies are periodically tested to ensure continued operability. The frequency for conducting these tests is established in Section 7.6 of the BVPS EPP for each of the communications links. The Beaver Valley Power Station Operating Manual Chapter 40, "Station Communications", provides instructions to operating personnel for the performance of these tests. The annual exercies provide for testing the entire emergency communications capability, including the aspect of understanding by message recipients.

4. Scenario Preparation

4.1 The Emergency Planning Supervisor will prepare the scenario for each exercise using the format of Attachment 2, "Drill/Exercise Scenario", or other appropriate format providing similar data.

4.2 The Operations Supervisor, or designee, will prepare the scenario for Emergency Squad Drills, using the format of the BVPS Operating Manual, Chapter 48.

4.3 Scenarios for exercises will be presented to the Station Superintendent for review and approval.

4.4 For exercises involving offsite organizations, appropriate discussions should be held with the emergency planning coordinator of those organizations to facilitate preparation of a scenario which represents the most efficient use of the exercise effort.

4.5 If possible, exercises or drills involving the participation of offsite organizations should be coordinated with the Shippingport Atomic Power Station, to minmize unnecessary repetition of offsite agency response. For example, the response of the Aliquippa Hospital to a contaminated injured individual from the BVPS is the same as that for an individual from the SAPS.

4.6 All offsite agencies having a response role in the exercise should be notified of the proposed exercise at least one week prior to the start of the exercise.

5. Drill/Exercise Observers

5.1 Drills are elevated by the drill instructor and additional observers as deemed necessary.

5.2 Exercises will be observed by qualified personnel from within Duquesne Light, or by consultants to DLC. A minimum number of observers should be identified in the scenario. These individuals should be assigned a specific area to evaluate. All observers should be briefed on the exercise, expected responses at that area, and asafety concerns related to possible responses. Written instructions may be provided if deemed necessary. Observers at control stations should be provided with cards specifying the desired simulated instrument readings, valve positions, alarm status, and other parameters necessary for the logical progression of the exercise.

5.4 In addition to the specified observers, personnel from regulatory agencies, local goverments, Federal agencies, and/or state goverments may be invited to observe and comment on the exercise.

5.5 A representative from the Offsite Review Committee should observe each annual exercise.

6. Other Exercise Preparations

6.1 Duquesne Light Public Information Department should be notified of a proposed exercise and should prepare appropriate press releases prior to the exercise, and following the completion of the exercise critique. The purposes of the pre-exercise press releases is to ensure that the general public is aware that an exercise, and not a real emergency, is underway.

7. Drill/Exercise Critiques

7.1 Following the completion of the exercise, a critique of the exercise should be held as soon as practicable. All offical observers, the Emergency Director, and the TSC/EOF Staff as appropriate, shall participate in this critique. The Emergency Planning Sueprvisor, or designee, will serve as chairman, and will prepare a written summary of the exercise, based upon the critique. This written summary should include:

7.1.1 The exercise scenario (Attachment 2)

7.1.2 Check lists (Attachment 1)

7.1.3 Observer comments (Attachment 3)

This report will be presented to the Onsite Safety Committee for review, evaluation, and assignment of responsibilities for corrective actions.

7.2 As part of the annual review of the Emergency Preparedness Plan, all exercise reports will be reviewed and any outstanding corrective actions addressed.

E. PROCEDURE

1. Start the Drill/Exercise Check-list (Attachment 1).
2. Prepare and document the drill/exercise scenario on Attachment 2, or another format containing the equivalent information.
3. Conduct the exercise.
4. Conduct and document a critique using Attachment 3, or another appropriate format containing the equivalent information.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.

2. Title 10, CFR PART 50

3. NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

G. ATTACHMENTS

1. Drill/Exercise Check-list

2. Drill/Exercise Scenario

3. Drill/Exercise Observer Comments

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DRILL/EXERCISE CHECK-LIST

Preparatory Actions

______1. Record in the title of the Drill ______________________.

______2. Prepare a drill/exercise scenario in accordance with EPP/IP-7.2

______3. Present the drill/exercise to the Manager, NS & L for approval.

______4. Notify offsite agencies participating in the exercise.

______5. Notify DLC PID and have them prepare appropriate press releases on the exercise.

______6. Conduct a preliminary drill/exercise meeting with designated observers and participatnts as deemed necessary.

Exercise Conduct

______1. Conduct the drill/exercise.

______2. Record the date ______________.

______3. Record the time-start ______________.

______4. List all observers and assigned location

________________________________ ____________________

________________________________ ____________________

________________________________ ____________________

________________________________ ____________________

________________________________ ____________________

________________________________ ____________________

Use additional sheets as necessary.

Following the Exercise

______1. Collect the Drill/Exercise Observer Comments sheets.

______2. Conduct a critique with the observers and key participants.

______3. Present the drill/exercise document package to the Onsite Safety Committee for review/evaluation and assignment of responsibility for corrective actions.

______4. Enter corrective action assignments in the open action item list system.

Prepared by: ________________________ Date: ________________________

Approved by the Onsite Safety Committee.
Approved by: ________________________ Date: ________________________

Approved by Station Superintendent.

________________________ Date: ________________________

DRILL/EXERCISE SCENARIO

1. Drill/exercise Title ______________________________

2. Purpose of the drill/exercise ____ ______________________________

____

3. Date and time the drill/exercise is scheduled ______________

4. Objectives: ______________________________

____

____

____

____

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5. Assumptions: ______________________________

____

____

____

____

6. Participating organizations offsite:
   1. ______________
   2. ______________
   3. ______________
   4. ______________
   5. ______________
   6. ______________

7. List drill/exercise sequence of events and expected response.

   -1 Brief involved personnel
   0 (Initial simulated event(s))
   1
   2
   3
   4
   5
   ... (Use additional sheets as necessary)
   ...

8. Summary of the drill/exercise.
   (Use additional sheets as necessary)

Duquesne Light

DRILL/EXERCISE OBSERVER COMMENTS

Observers Name:______________________________ Drill Date:______________

Observers Location:____

Items/Actions to Observe:____

____

____

____

Time Drill Commenced:__________________________ Time Drill Terminated:________

OBSERVATIONS, COMMENTS & RECOMMENDATIONS Page_____of_____

NOTE: Observations should include the proper and effective use of procedures, equipment, and personnel, in addition to the specific items or actions to be observed identified above.

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DEFICIENCIES

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NOTE: Use additional sheets as necessary.

Signature:______________________________ Title:__________________

Duquesne Light

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MONTHLY QUARTERLY, ANNUAL COMMUNICATIONS/VERIFICATION CHECK

A. OBJECTIVE

This procedure provides instructions for conducting monthly phone communication and number verifications of key emergency response agencies and to test the emergency phone equipment.

The Emergency Planning Supervisor is responsible to ensure the actions outlined in this procedure are carried out.

B. PREREQUISITES/INITIAL CONDITIONS

During the months of January, April, July, and October, the quarterly phone checks will be performed in conjunction with the monthly checks. During the month of January, the annual phone checks will be performed in conjunction with the monthly checks.

C. PRECAUTIONS

None

D. GUIDANCE AND CRITERIA

Testing shall be made to all offsite authorities and other individuals listed on the emergency phone number checklist by designated emergency preparedness section personnel according to the interval of testing identified on the checklist.

E. PROCEDURE

Perform monthly phone checks per Attachment #1 on the first working day of each month.

In addition to the monthly phone checks in months of January, April, July, and October, perform quarterly phone checks per Attachment #2.

In addition to the monthly phone check performed in January, perform annual phone check per Attachment #3.

1.1 Contact each organization or individual using the telephone number listed.

NOTE

An alternate Auto Dialer should be used each month to contact the agencies listed on the monthly phone check. The Auto Dialers are located in the Control Room, T.S.C., and EA and DP room. Over a four month period each auto-dialer should have been tested and verified operable.

NOTE

In conjunction with PEMA, a monthly communications drill will be conducted and initiated by BVPS calling PEMA on a pre-arranged date and relaying the information on the initial notification form (EPP/IP 1.1, Attachment 1). PEMA will then contact individuals or organizations in accordance with their emergency plan.

For a classification of a site area or general emergency, a call back by BRP will be received at BVPS on the white hotline phone extension.

1.2 When the party answers, inform them that this is BVPS conducting a communication equipment test. Verify the number, the alternate emergency number and the party contacted. Note results on the Attachments.

1.3 If a party cannot be contacted in a reasonable period of time, by-pass that party and proceed down the list. After the other tests are complete, re-attempt to contact any by-passed parties.

1.4 Upon completion of the test, contact the shift supervisor (PAX 5102) and inform him that these phone numbers are still in effect or notify him of any changes. After phone numbers are verified and the necessary corrections made, send copies to the shift supervisor and EPP supervisor.

1.5 Transmit original copy of this monthly test to the Document Control Room for records purposes.

2.0 If any NRC phones (ENS red phone or HPN black phone) are found to be inoperable, the NRC should be notified within one hour in accordance with prompt notification and instruction information procedure found in Operating Manual, Chapter 48, Section 9.

F. ATTACHMENTS

1. Monthly Emergency Phone Number Checklist
2. Quarterly Emergency Phone Number Checklist
3. Annual Emergency Phone Number Checklist

Monthly Emergency Phone Number Checklist

Attachment No. 1

Individual Performing Checks ____________________

LOCATION	EMERGENCY NUMBER	INITIAL/ DATE	REMARKS/ CORRECTIONS
EPP/OFFSITE AGENCIES Beaver County Emergency Management Agency 774-1049 (working hours) County Director - Russ Chiodo County Communications Center 775-0880 (24 hours)	774-1049 775-0880		
PA Emergency Management Agency Harrisburg, PA 1-717-783-8150 (24 hour emergency no.) Normal Business hours 1-717-787-2121 (Agency info. only)	1-717-783-8150 1-717-787-2121		
Columbiana County Disaster Services [illegible]ncy - 216-424-9725 [illegible]nty Director - Mel Lippiatt County Sheriff's Office - 216-424-7255 (24 hours)	1-216-424-9725 1-216-424-7255		
Hancock County Emergency Services Sheriff's Office - 1-304-564-3311 (24 hours) County Director - Andrew Kondik 1-304-723-3316 (home)	1-304-564-3311		
Ohio Disaster Services Agency (ODSA) Nuclear Preparedness Office - Mr. Williams 1-614-889-7157 - Columbus, Ohio 1-614-889-7150 (24 hours)	1-614-889-7157 1-614-889-7150		
West Virginia Office of Emergency Services (WVOES) _ 1-304-348-5380 Off-Working Hours-Gary Morris Charleston, West Virginia State Police 1-304-348-6370	1-304-348-5380 1-304-348-6370		

Monthly Emergency Phone Number Checklist (con't)

Attachment No. 1 (con't)

Individual Performing Checks____________

LOCATION	EMERGENCY NUMBER	INITIAL/ DATE	REMARKS/ CORRECTIONS
NRC Red Hotline (Control Room - NSS Office) Alternate Emergency No. 1-301-427-4056	Red Hotline 1-202-951-0550 1-301-427-4056		
NRC Red Hotline Control Room (NSOF Area)	Red Hotline		
NRC Red Hotline (OSC Area, near Shutdown Panel)	Red Hotline		
NRC Red Hotline (TSC - Administration Bldg.)	Red Hotline		
NRC Red Hotline (EOF, Administration Bldg.)	Red Hotline		
NRC Red Hotline (NRC Resident Inspection Office)	Red Hotline		
NRC Black Hotline (Control Room - NSS Office) Alternate Emergency No. 1 -301-492-7000	Black Hotline 1-301-492-7000		
NRC Black Hotline (Radcon Foreman's Office)	Black Hotline		
NRC Black Hotline (EOF, Administration Bldg.)	Black Hotline		
NRC Black Hotline (NRC Resident Insp. Office)	Black Hotline		
DER/BRP HARRISBURG HOTLINE EXTENSIONS			
BRP White Hotline (Control Room - NSS Office)	White Hotline		
BRP White Hotline (EA & DP Room, Administration Bldg.)	White Hotline		
BRP White Hotline (TSC, Administration Bldg.)	White Hotline		

Monthly Emergency Phone Number Checklist (con't)

Attachment No. 1 (con't)

Individual Performing Checks____________________

LOCATION	EMERGENCY NUMBER	INITIAL/ DATE	REMARKS/ CORRECTIONS
AMBULANCE Medic Rescue Beaver Falls, PA 847-0832 728-3620 Emergency No. 775-0880 (24 hours)	775-0880 847-0832 728-3620		
Community EMS Aliquippa, PA 728-6612	728-6612		
POLICE Shippingport Police Shippingport, PA 643-1371	643-1371		
Midland Police Midland, PA 643-1200	643-1200		
FIRE Offsite Fire Departments via County Mutual Aid Fire Plan (Via Police Dispatch - 775-0880, 24 hours)	775-0880		
HOSPITALS/MEDICAL Aliquippa Hospital Emergency Room - 857-1274 Nuclear Medicine - 857-1255	1-857-1274 1-857-1255		
Dr. Pantalone Aliquippa, PA			

Monthly Emergency Phone Number Checklist (con't)

Attachment No. 1 (con't)

Individual Performing Checks________________

LOCATION	EMERGENCY NUMBER	INITIAL/ DATE	REMARKS/ CORRECTIONS
Beaver County Medical Center Emergency Room 728-7110	728-7110		
Dr. Neil Wald Pittsburgh, PA Day: 1-647-3495 Night: (home)	1-647-3495		
Dr. Albert Spritzer Pittsburgh, PA			
Presbyterian Hospital Emergency Room Pittsburgh, PA 1-647-3333	1-647-3333		
WEATHER/METEOROLOGY National Weather Service Forecast Office - 1-644-2828, 2883, 2884, 2881 (24 hour) Coraopolis Office 1-644-2891 Severe Weather 1-644-2888	1-644-2882 2883, 2884 1-644-2891 1-644-2888		

NOTE: After calls are made, send copies to EPP Supervisor and Shift Supervisor verifying that numbers are correct or if there are any corrections.

QUARTERLY EMERGENCY PHONE NUMBER CHECKLIST

Attachment No. 2

Month______________Date______________

Individual performing test ______________

LOCATION	EMERGENCY NUMBER	INITIAL/ DATE	REMARKS/ CORRECTIONS
State Police 1-843-5100 or 5101, 1-775-5991	1-843-5100 or 5101 1-775-5991		
U.S. Coast Guard 1-644-2673 or 2675 Marine Safety/Pittsburgh 1-644-5808 Nat'l Response Center/DC 800-424-8802 Emergency Management Division Office 1-644-6833	1-644-2673 or 2675 1-644-5808 800-424-8802 1-644-6833		
U.S. Corps of Engineers New Cumberland Dam 1-614-537-2571 Montgomery Dam - 1-643-8400	1-614-537-2571 1-643-8400		
...artment of Environmental Resources ...iation Protection 1-717-787-3479 ...ector's Office 1-717-787-2480 ...eral Office 1-717-787-3720 24-hours no. - c/l PA Emergency Management Agency 1-717-783-8150	1-717-787-2163 1-717-787-3479 1-717-787-2480 1-717-787-3720 1-717-783-8150		
EPA Region III 24-hour no.:1-215-597-9898 or 9899 Bill Bellanger	1-215-597-9898 or 9899		
Brookhaven Area Office - Rad. Assistance Program (Long Island, NY) 1-516-282-2200	1-516-282-2200		
American Nuclear Insurers Farmington, CT Fire: 800-243-3127 Rad. or Nuclear: 1-203-677-7305	800-243-3172 1-203-677-7305		

NOTE: After calls are made, send copies to EPP Supervisor and Shift Supervisor verifying that numbers are correct or if there are any corrections.

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ANNAUL EMERGENCY PHONE NUMBER CHECKLIST

Attachment No. 3

Month______________ Date______________

Individual Performing Test________________________

LOCATION	EMERGENCY NUMBER	INITIAL/ DATE	REMARKS/ CORRECTIONS
U.S. Weather Bureau 1-644-2881 or 2882	1-644-2881 1-644-2882		
Maxwell Dam 1-785-3247	1-785-3247		
Emsworth Dam 1-766-4555	1-766-4555		
Pike Island 1-304-277-4646	1-304-277-4646		
Lock #4 1-224-0228	1-224-0228		
Weather Service, River Forecast 1-644-2890	1-644-2890		
Conrail - Supervisor of Train Operations 1-928-7206	1-928-7206		
Pittsburgh & Lake Erie Railroad 1-216-0650 - Chief train dispatcher 1-375-5507 Aliquippa train yard	1-216-0650 1-375-5507		
...cible Steel (police chief) ...-1100, Ext. 2802	643-1100 Ext. 2802		
Bruce Mansfield Plant 643-5000	643-5000		
E.W. Bliss Co. (McIntosh/Hemphill) 643-8600	643-8600		
Linde Company (Div. of Union Carbide) 643-8030 643-1100, Ext. 2784 (@ Crucible)	643-8030 643-1100		
Ashland Pipeline Company 800-354-8850	800-354-8850		
Ashland-Valvoline, Freedom, PA 774-2020 or 216-866-3588	774-2020 1-216-866-3588		
Buckeye Pipeline Company 1-215-967-3131	1-215-967-3131		
Laurel Pipeline Company 1-264-7432	1-264-7432		
Mobil Pipeline Company 1-201-754-3546	1-201-754-3546		
National Transit - 1-225-0410 or 1-814-677-3008	1-225-0410 1-814-677-3008		
Midland Water Treatment Supply 643-4920 Don Craik (Manager)	643-4920		
E...st Liverpool Water Supply ...16-385-8812 & 385-5050	1-216-385-8812 1-216-385-5050		

...E: After calls are made, notify EPP Supervisor and Shift Supervisor that numbers are correct or if there are any corrections.

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INADVERTENT SIREN ACTIVATION

A. OBJECTIVE

This procedure provides instructions to Control Room personnel in handling and documenting a complaint of a siren that has been inadvertently activated.

B. PREREQUISITES

2.1 A complaint is received that a siren is inadvertently operating.

C. PROCEDURE

Should there be a complaint received that a siren is inadvertently operating document the following information on the attached (Attachment 1).

1. Confirm from source if it is intermittently going on and off, continuously blowing, or whether the siren sounded once and has stopped.
2. Obtain the name and phone number of the initial complaintor.
3. Obtain the location of the siren (i.e., street name, intersection, etc.) and appropriate State (Pennsylvania, Ohio, West Virginia).
4. If siren needs immediate attention (i.e., siren is continuously blowing, or intermittently going on and off), perform both (a) and (b) below.

   a. Call T & D/D.O.C.
      @ PAX 68111 (24 hours)

      and have T & D Troubleman de-energize siren unit.

   b. Call SS&S Western District
      Protection Supervisor (or Dispatcher)
      @ PAX 2308 (daylite), or
      PAX 2327 (24 hours - Valley Substation)

3.5. If siren does not need immediate attention (i.e., siren sounded once and stopped) call:

a. SS&S Western District
Protection Supervisor (or Dispatcher)
@ PAX 2308 (daylite), or
PAX 2327 (24 hours - Valley Substation)
and have SS&S investigate/repair affected siren during normal daylite hours.

3.6. Complete Attachment 1, Complaint Form and, if applicable, have reviewed by NSS or NSOF. Send copy to EOP Supervisor and retain original for records verifications in Control Room.

D. ATTACHMENTS

4.1 BVPS - Siren Warning System Complaint Form

BVPS - SIREN WARNING SYSTEM

COMPLAINT FORM

1. Received: Date ______________

   Time ______________

2. Symptoms: Intermitently blowing YES/NO

   Continuously blowing YES/NO

   Sounded once and stopped YES/NO

   Other ______________

3. Complaintor: Name of Complaintor ______________

   Phone Number ______________

4. Location:

   Location of affected siren ______________

   ____

   State of PENNSYLVANIA/OHIO/WEST VIRGINIA (Circle One)

5. Followup Action Taken:

   Who called T & D / S S & S
   (Circle, as appropriate)

   Requested action De-energize / Repair / Investigate
   (Circle, as appropriate)

Completed by: ______________

Reviewed by: ______________
NSS or NSOF Signature

Send copy to EPP Supervisor and retain original for Control Room file.

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FIRES IN CONTROLLED AREAS

A. OBJECTIVE

The purpose of this procedure is to provide instructions for prompt and efficient handling of a fire in a controlled area.
The Emergency Director is responsible to implement this procedure.

B. PREREQUISITES/INITIAL CONDITIONS

1. The first priority during fire-fighting efforts is personnel safety.
2. Fire is usually a more immediate hazard to life, safety, and property than the radioactivity which may be encountered in fire-fighting in radiologically controlled areas. Appropriate contaminaton and exposure control measures should be implemented, if the measures will not have an adverse effect on the efficienty of fire-fighting efforts. Emergency personnel radiation exposures may be applicable. Refer to EPP/IP-5.3.
3. Although this procedure is related only to fire-fighting in controlled areas, fires in uncontrolled or controlled areas constitute emergency conditions which may require implementation of the BVPS Emergency Preparedness Plan. Refer to EPP/I-1, "Recognition and Classification of Emergencies". For this reason, fire-fighting efforts in accordance with the Operating Manual Chapter 56B and/or this EPP/IP may be implemented simultaneously with the implementation of emergency measures as provided in other emergency implementing procedures and the BVPS Emergency Preparedness Plan.

D. GUIDANCE AND CRITERIA

In order to minimize the radiological consequences of the fire or the fire-fighting efforts, appropriate contamination and exposure control measures should be implemented consistent with Step C.2. Corrective and protective measures which could be employed include:

1. Evacuation of all personnel not involved with fire-fighting efforts from the affected areas.

2. Use of appropriate protective clothing and respirators to minimize the contamination or the exposure of personnel to radioactive material.

3. Use of carbon dioxide, dry chemical, or similar non-water extinguishing agents subject to ready availability, to minimize creation of large quantities of contaminated water and potential contamination of adjacent areas by run-off.

4. Appropriate radiation surveys and air sampling, as soon as possible in areas occupied by Fire Brigade members.

5. As smoke and run-off water spreads radioactivity, appropriate access control measures should be established in adjacent areas to minimize inadvertent personnel exposure/contamination, or to contain the further spread of radioactivity.

6. Samples of smoke and run-off water should be obtained to assess the activity released.

7. Appropriate surveys should be performed on all personnel and equipment prior to release.

E. PROCEDURE

1. Initial Response

1.1 The first person who discovers a fire shall immediately report the location and type of fire to the Control Room using the most expeditious communications means available.

1.2 Individuals at the scene of the fire shall attempt to extinguish the fire with available equipment, if such actions can be performed safely.

NOTE

If the fire is of such a size that personnel at the scene can safetly extinguish it, such action should take precedence over notifying the Control Room in order to prevent a small fire from getting out of control.

1.3 Control Room personnel shall sound the Standby Alarm three (3) times.

1.4 Announce over the page system that a fire exists, stating the location, type of fire and alerting the Fire Brigade to assemble at the Brigade Storage Change Area. Request others to stay clear of the affected area(s).

- Repeat the announcment-

1.5 Control Room personnel shall take appropriate corrective actions to mitigate the consequence of the fire on plant operations.

1.6 Control Room personnel shall check the fire protection system annunciators to determine the status of the fire protection system. Shift operating personnel shall confirm that the fire protection system is operating properly and take whatever corrective actions are necessary to maintain system operability, if necessary.

1.7 If the fire cannot be extinguished within 10 minutes of the arrival of the fire brigade, or the potential exists for an uncontrollable or major fire, declare an emergency and request offsite assistance as follows:

1.7.1 Request offsite assistance by contacting the Beaver County Communications Center (775-0880, or DLC Radio) and requesting assistance. Provide the following information:

- Name of facility: Beaver Valley Power Station
- Name and title of individual requesting assistance
- Location of fire (Zone)
- Type of fire (Minor, Plan A, or Plan B)

Refer to the Mut ıal Aid Fire Plan for identificaiton of zones.

1.7.2 Notify the Station security force of the fire, request traffic control of non-essential personnel away from the fire scene, and to direct offsite fire assistance to the scene of the fire. Security will notify Radcon to provide dosimetry to the offsite personnel at the point of entry.

1.7.3 Implement the BVPS Emergency Preparedness Plan and carry out emergency measures in accordance with EPP/Instructions and emergency implementing procedures, if not already performed.

1.8 Continue to assess plant conditions and the status of the fire-fighting efforts. Escalate the emergency condition as appopriate to the changing conditions.

2. Subsequent Action

2.1 When the Fire Brigade has reported to the Change Area, the Fire Brigade Chief will assume control of brigade actions.

2.2 The Fire Brigade shall don appropriate fire-fighting gear or protective clothing, including self-contained breathing units, as directed by the Brigade Chief.

NOTE

Normal fire-fighting clothing (including, boots, helmet, gloves and coat) are more effective in minimizing contamination of brigade members than normal protective clothing. Thus, these outfits may be considered as protective clothing. If fire-fighting outfits are not available, appropriate protective clothing shall be donned, as necessary.

2.3 The Fire Brigade shall be preceded (or accompanied) by a Radcon Technician, or a designated, qualified member of the Fire Brigade, who will continuously monitor the radiation dose rate as the brigade proceeds to the fire. This individual will keep the Fire Brigade Chief informed of radiological conditions and may make appropriate exposure/contamination control recommendations, until fire-fighting efforts have been terminated.

2.4 Based on the results of the monitoring and recommendations of the Radcon technician, the Brigade Chief shall establish the radiological controls procedures to be exercised by the Fire Brigade, determine the need for additional assistance, and initiate local or remote operations that may be required. The Brigade Chief shall inform brigade members and the Control Room of these measures and/or the need for assistance as soon as practicable.

2.5 The Fire Brigade will take appropriate actions to extinguish the fire at the direction of the Brigade Chief, and as provided in the Operating Manual, Chapter 56B.

2.6 If additional offsite assistance is requested, security will then notify Radcon to distribute TLD's and Dosimeters to the offsite personnel at the entry point. Security will provide escort to the scene of the fire for the offsite personnel. Normal dosimetry issue procedures must identify each fire-fighter and the serial number of the dosimetry devices issued to each individual prior to offsite personnel leaving the site.

2.7 The Fire Brigade Chief (or designee) shall advise arriving personnel on the status of the fire and the related radiological conditions. The fire-fighters will be briefed on appropriate exposure/contamination control measures. Fire fighters will don appropriate protective clothing and respirators as directed by the Brigade Chief. See Step E.2.2 for guidance on protective clothing.

2.8 Perform any operations necessary to assure the safety of personnel and of the Station (eg: de-energeize electrical equipment, etc.) and mitigate the effects of the incident on other station personnel and the general public.

2.9 Maintain a list of all personnel (with TLD badge numbers) who come onsite and assist in combatting the fire for post-accident exposure evaluation.

2.10 Arrange for augmenting the fire brigade personnel,and provide reliefs for Fire Brigade personnel, to enable replacement of respirator aid cylinders, or to alleviate personnel discomfort or injury.

3. Recovery Actions

After the fire is under control and/or extinguished:

3.1 Perform surveys to determine radiation levels, the need for decontamination, and the need for continued respiratory protection. A radiation survey in the immediate area of the fire will be useful in estimating personnel exposure in the event that personnel TLDs and dosimeters are lost or destroyed.

3.2 Monitor all equipment used in fire-fighting efforts prior to release from the affected area and/or the controlled area. Decontaminate or replace equipment belonging to offsite support groups.

3.3 Monitor all personnel for contamination prior to their leaving the affected area. Take nose swipes and evaluate the potential for inhalation. If the nose swipe is positive, whole body counting should be performed at the direction of Radcon personnel. If personnel are contaminated, Radcon personnel shall direct and/or perform decontamination efforts.

3.4 Estbalish appropriate access control measures to restrict access to the affected areas.

3.5 Initiate appropriate decontamination and other corrective actions to restore the area to normal occupancy, if possible.

3.6 The Fire Brigade Captain shall insure that the post-fire surveillance list is complete, in accordance with Chapter 56B of the Operating Manual.

F. REFERENCES

1. Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.

2. Beaver Valley Power Station Operating Manual, Chapter 56B

3. Mutual Aid Fire Plan

4. NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

G. ATTACHMENTS

None

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B.V.P.S. -- E.P.P.

Emergency Implementing Procedure

PUBLIC INFORMATION DEPARTMENT

EMERGENCY PUBLIC INFORMATION PLAN

BEAVER VALLEY POWER STATION

This procedure, prepared and approved by DLC Public Information Department personnel is incorporated into the BVPS EPP as EPP/IP-9.1.

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Duquesne Light

Public
Information
Department

Emergency
Preparedness Plan

Beaver Valley Power Station
Shippingport, Pennsylvania

Revised 6/30/82

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PURPOSE

The Emergency Public Information Plan for nuclear plant operations is a portion of the Duquesne Light Company Emergency Preparedness Plan for Beaver Valley Power Station (BVPS) submitted to the Nuclear Regulatory Commission.

It is important to understand that this is not a "final" plan. As circumstances change, the plan will be changed. It will be reviewed and updated regularly.

The plan is designed:

1. To coordinate the public communications effort.
2. To enhance the safety of the public by the issuance of timely, accurate information on an accident and to maintain an orderly flow of information during the recovery period.
3. To assign responsibilities and duty locations for Public Information staff and support personnel.
4. To describe the means to staff the Corporate Public Information offices in Pittsburgh, and to activate and staff the Near-Site Emergency News Center.
5. To train personnel in their functions as they relate to the plan and to test, at regular intervals, the response to the plan.
6. To describe the Public Information program designed to periodically disseminate emergency planning instructional material to residents and transients in the emergency planning zone.

THE PUBLIC'S RIGHT TO INFORMATION

Duquesne Light Company respects the public's right to information about its operations and service and, in particular, to information about accidents and unplanned events which occur during Company operations.

The Company's policy has been to make public accurate information about these events. This policy is the basis on which the Public Information plan for nuclear emergencies has been developed.

The Company will provide this information through news announcements, briefings, television and radio announcements.

The Company, through the Nuclear Division and Public Information Department, will also designate spokespersons to answer questions raised by the public, the media, government or other companies.

These spokespersons are directed to answer all questions accurately, thoroughly and quickly. If they do not have an immediate answer to a question, they are directed to obtain the information and reply in a timely manner.

GENERAL PUBLIC INFORMATION POLICY ON NUCLEAR PLANT INCIDENTS

1. Duquesne Light Company has established a policy of full public disclosure of all significant incidents at Beaver Valley Power Station. Many of these incidents are not "emergencies" but are nevertheless disclosed to the public.
2. The Beaver Valley Power Station emergency plan specifies that the power station notifies the Public Information Department (PID) by telephone of an emergency (see Appendix A). Upon receipt of this notification, the Office of the Manager-Public Information (Manager/PID) activates all or part of its Emergency Public Information Plan, depending on the nature of the incident. Four classifications of incidents at nuclear power stations have been designated under the Company's emergency plan.
3. The Manager/PID, reporting to the Chief Executive Officer, will supervise the issuance of news announcements.
4. In the event of a serious emergency, the Manager/PID will establish a Near-Site Emergency News Center to help coordinate the dissemination of information to the public.
5. A PID staff member will be assigned, during serious emergencies, to the site Technical Support Center to coordinate the flow of information from the plant to the Public Information Department, and to write and secure approval of news announcements. The news announcements will be approved at the Emergency Operations Facility by either: 1) the Emergency Director, or 2) the Recovery Manager.
6. The Nuclear Division will designate a technical expert to appear and to act as the Company spokesperson at all briefings at the Emergency News Center. Preferably, the same expert representative should appear as frequently as possible. The Manager/PID or PID senior staff member on the scene will preside at all news conferences.

CLASSIFICATION OF INCIDENTS

The Public Information Department will be alerted by the Beaver Valley Power Station in the initial phone call as to the severity of the incident and its classification under the plan.

The Beaver Valley Emergency Plan lists four classifications of incidents. In summary, the classifications are:

Unusual Events: Events within this classification generally characterize abnormal plant conditions which, by themselves, do not constitute significant emergency conditions. Some of these events could, however, indicate a potential degradation in the level of plant safety and/or could escalate to a more severe condition if appropriate action is not taken.

Alert Condition: In this classification are events which are in progress or have occurred which involve actual or potential substantial degradation of the level of safety of the plant. An alert requires response by the plant emergency organization, augmentation of onsite emergency resources, and constitutes the lowest level where emergency offsite response may be anticipated.

Site Area Emergency: A site area emergency is characterized by events involving actual or probable major failures of plant functions needed for protection of the public. Most events within this classification constitute actual or clear potential for significant releases of radioactive material to the environment. Although emergency response actions involving members of the public may not be necessary, offsite emergency response organizations should be mobilized and ready to implement protective measures.

General Emergency: In this classification are events which are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity, and release of significant radioactivity to the environment. Total activation of the onsite and offsite emergency organizations is required. Actions involving offsite populations are highly probable.

RELATIONSHIP WITH OTHER AGENCIES

1. Duquesne Light Company's Public Information Department is responsible for the preparation and issuance of all news announcements related to plant conditions at the Beaver Valley Power Station.

   State and County emergency management agencies are responsible for the issuance of public announcements relating to offsite conditions, including recommended emergency measures and evacuation requirements.
2. Space for the information officers of Federal, State and County agencies will be offered at the Emergency News Center (see Appendix G). Communications facilities will be available to these officers.
3. Representatives of these agencies will be invited to participate at news briefings. The Company may issue joint news announcements with them.
4. As a general practice, Duquesne Light's news announcements will be submitted or telephoned to the information officers of the government agencies at the same time — or if practical — before they are issued to the media.
5. The County and State emergency management agencies have been asked to advise Duquesne Light's Public Information Department of announcements issued to the news media or the Emergency Broadcast Stations.

CORPORATE COMMUNICATIONS EMERGENCY PLAN PROCEDURE

Upon notice from the power station of any event defined in the classification of the emergency preparedness plan, the Public Information Department will respond as described below for each type of incident.

In all cases, the Manager/PID or a Director/PID will be designated to take charge.

Unusual Events: The Manager/PID or designated representative will issue a news announcement, if justified, after consultation with the senior officer of the Nuclear Division. News announcement distribution will also be made to the emergency management agencies, and public information officers of the joint owners of BVPS, industry associations, and government agencies according to the Public Interest Call List.

Alert Conditions: The Manager/PID will authorize the issuance of a news announcement after verification of facts with the senior Nuclear Division officer. The Manager/PID or the designated PID staff member will initiate such personnel call out and staff assignments as required by the plan. At least one PID representative and a technical adviser will be assigned to the Beaver Valley Technical Support Center (when activated). The Manager/PID and Vice President-Nuclear Division will consult in anticipation of the need to activate the Emergency News Center.

Site Area Emergency: The Manager/PID will authorize issuance of a news announcement after verification of facts with the senior Nuclear Division officer. The emergency call out and staff assignment procedure will be effected including activation of the Emergency News Center.

General Emergency: The Manager/PID will authorize issuance of a news announcement after verification of facts with the senior Nuclear Division officer. The emergency call out and staff assignment procedure will be effected including activation of the Emergency News Center.

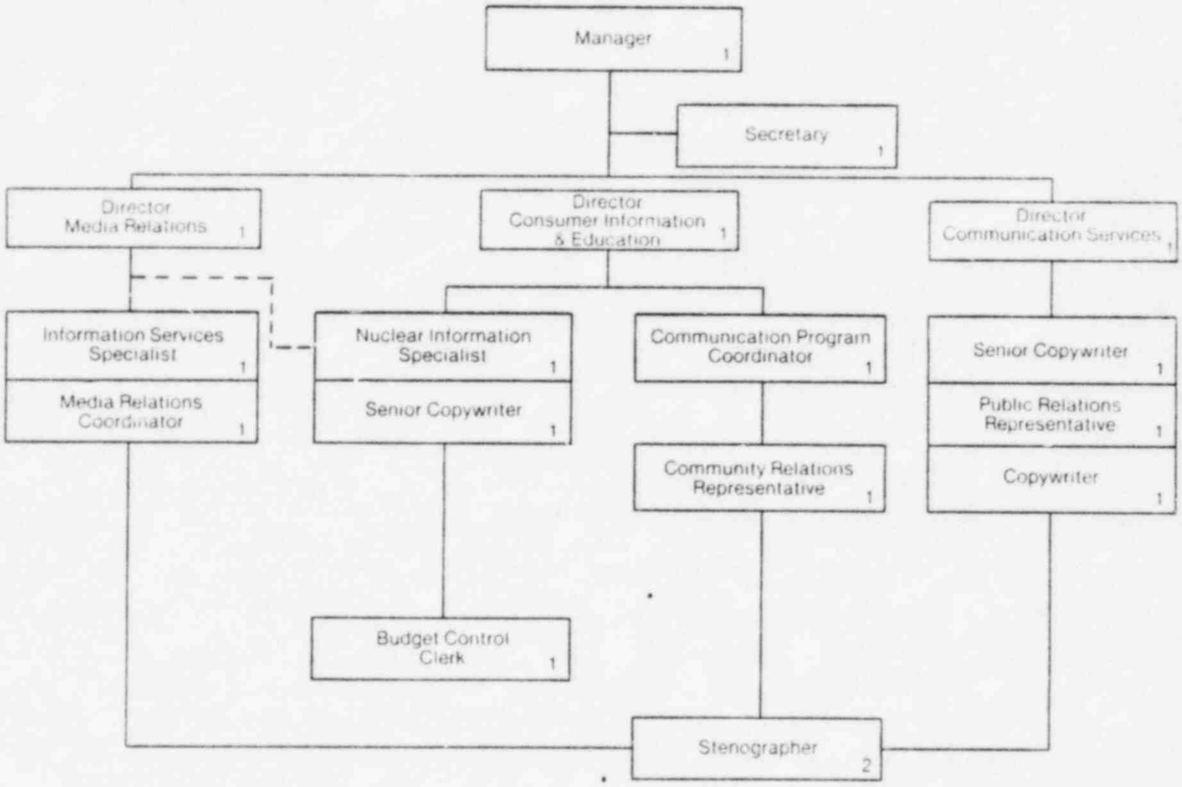
Note: If radiological conditions prevent the use of the Willows Motel in Industry, PA as the Near-Site Emergency News Center, the PID Headquarters in Pittsburgh will be the back-up Emergency News Center.

EMERGENCY CALL OUT AND STAFF ASSIGNMENT PROCEDURE

In the event of a Site Area Emergency or General Emergency the Corporate Communications response will be as follows:

The Manager/PID or senior PID staff member will cause the emergency organization to be activated and will order the staff assignments as described on the following pages and in Appendices A, B, C.

DUQUESNE LIGHT
PUBLIC INFORMATION DEPARTMENT STAFF



PID STAFF ASSIGNMENTS

Staff-Supervisory Assignments: Depending on the type of incident, Public Information will staff the following locations. (See Appendices B and C.) The supervision of each location will be as follows:

1. **The Pittsburgh Headquarters News Center,** Pittsburgh. The Manager/PID (initially at least) will remain with the Chief Executive Officer and will direct all Corporate Communications activities at all locations. The Manager will assign the Director of Communication Services to supervise the staff assigned here to operate a Headquarters News Center. This staff will remain on duty around-the-clock to coordinate the exchange and verification of information.
2. ***Technical Support Center,** BVPS. The Communication Program Coordinator or the Director/Consumer Information & Education, a designated PID staff writer, and a technical adviser will be assigned to the Technical Support Center to write news announcements and to relay all emergency information from the plant to the public information outlet at the Corporate Headquarters in Pittsburgh. Once the Near-Site Emergency News Center is activated, all emergency information will be directed to this location.
3. ***Near-Site Emergency News Center,** Willows Motel, Industry, PA. The Director Media Relations and PID Nuclear Information Specialist will supervise assigned PID staff and support personnel, and issue the "single source" information about the emergency recovery operation and provide information and assistance to the media at this location.
4. **Beaver County Emergency News Center.** PID staff member will monitor news announcements by the County at the Beaver County Courthouse.

Transportation of Staff: Generally, staff will travel by private or public methods from homes to the Pittsburgh Office or their assigned emergency posts. Supervision and key staff members assigned from the Pittsburgh Office to BVPS and the Willows Motel Emergency News Center will be provided ground transportation and, if needed, helicopter service from Downtown Pittsburgh to the Willows. The remainder of these staffs will be transported by ground vehicles from the Pittsburgh Office or from designated service buildings. Private vehicles will be discouraged. The Company Transportation Section will assist in coordinating ground transportation arrangements.

*Activated for **Site Area** and **General Emergencies,** and **Alert**, if necessary or applicable.

POLICY ANNOUNCEMENTS

1. Any significant policy announcements on the emergency will originate from the Manager/PID in consultation with Company officers.
2. Any statements involving Company policy or relationship with government agencies will be approved by the VP/Nuclear and the Manager/PID.
3. The Manager/PID with the Chief Executive Officer and the General Attorney-Legal Department will be responsible for direct communications with the Chief Executive Officers of the United States and the Governors of Pennsylvania, Ohio and West Virginia. They should also provide information to the PUC and members of the Company Board of Directors.

ASSIGNMENTS — PITTSBURGH HEADQUARTERS NEWS CENTER

1. **Director-Communication Services** will report to the Public Information offices to supervise the Pittsburgh Headquarters News Center. He will assign staff members to be on duty at this location at all times during an emergency condition.
2. Any statements involving Company policy, relations with government agencies, other utilities and industry organizations will be prepared by the Public Information staff at the Pittsburgh Headquarters News Center.
3. Information on the emergency and advisories on subsequent developments will be coordinated with County, State, and Federal officials. The information representatives of co-owners, other electrical utilities and independent contractors will also be contacted. Contact will be made by telephone, telecopier and the Atomic Industrial Forum (AIF) Infophone from the Pittsburgh Headquarters News Center.
4. Until the Near-Site Emergency News Center is activated, public interviews, press conferences and TV appearances of the Company spokesman will be arranged by the Pittsburgh Headquarters PID staff.
5. The **Director-Media Relations** will coordinate issuance of Company news announcements, until such arrangements are completed at the Near-Site Emergency News Center.
6. Should radiological conditions prevent the use of the Willows Motel as the Near-Site Emergency News Center, the Pittsburgh Headquarters News Center will function as the Emergency News Center.

PID ASSIGNMENTS — TECHNICAL SUPPORT CENTER/EOF

In the event of the activation of the BVPS Emergency Plan for classes of emergencies above the "Alert" level, the **Communication Program Coordinator** or the **Director Consumer Information & Education,** a PID staff writer, and a technical adviser will be assigned around-the-clock to the Technical Support Center/EOF at BVPS (12-hour shifts). These PID representatives will obtain information from the technical personnel on duty, and write and secure approval of news announcements. The news announcements and technical information will be provided on a continuing basis to the Pittsburgh Headquarters News Center and the Near-Site Emergency News Center. The news announcements will be coordinated with the necessary government agencies before distribution to the news media. The Pittsburgh Headquarters News Center will coordinate the distribution of the news announcements with the Near-Site Emergency News Center.

(After the Near-Site Emergency News Center is activated, the news announcements will be distributed at the Near-Site Emergency News Center, and the Pittsburgh Headquarters News Center will be used as a back-up channel to handle inquiries and assist in the distribution of information to the news media, Company officials, government officials, large customers, communities, employees, and customers.)

A temporary Technical Support Center/EOF has been established in the BVPS Administration Building.

THE NEAR-SITE EMERGENCY NEWS CENTER

1. The Willows Motel, Route 68, Industry, PA is designated as the Near-Site Emergency News Center for a nuclear emergency. Basic supplies will be stored at an appropriate place on the site, or maintained for immediate delivery.
2. The Near-Site Emergency News Center will be activated at the order of the Manager/PID. A mobile office unit with appropriate communication facilities will be located at the Willows Motel as the PID office at the Near-Site Emergency News Center.

PID ASSIGNMENTS NEAR-SITE CENTER

1. As directed by the **Manager/PID,** the **Director-Media Relations** and the **PID Nuclear Information Specialist** will be the Supervisors of the Emergency News Center (serving on 12-hour shifts). These representatives will coordinate the periodic news briefings, distribution of information to the news media, the nuclear background briefings by technical experts, photographic arrangements, distribution of information to local officials, requests to go near the plant,

and will aid in the coordination of news announcements with County, State and Federal government officials.

2. Reporting to the Supervisors of the Near-Site Emergency News Center will be the **Media Relations Coordinator,** the **Public Relations Representative,** and assigned **Technical Advisers,** plus a support staff from the Company's Electrical Engineering, Telecommunications, Transportation, Government Relations, and Security sections. Their responsibilities will include setting up communications and electrical equipment, and handling other necessary support activities for the duration of the emergency.
3. The **Media Relations Coordinator** will coordinate special requests for information from the news media, aid the media in location photography near the plant site, and aid the Supervisors in arranging for the news briefings.
4. The **Public Relations Representative** will help establish the Near-Site Emergency News Center through coordination of the installation of telephone and telecopier equipment. This person will be responsible for the procurement and reproduction of visual aids and press kits for the news media. This person will also function as a PID liaison and coordinator of news media credentials.
5. The Near-Site Emergency News Center will have a full-time, nuclear-oriented, technical professional assigned by the Nuclear Division to provide technical explanations of information distributed and to provide background information to the news media.
6. The **Manager/PID** will assign members of the Company's Speakers' Team and other support personnel as needed, to back-up PID staff personnel at the Emergency News Center and the Pittsburgh PID Office.

OPERATION OF THE NEAR-SITE EMERGENCY NEWS CENTER

1. After the initial notification about a serious emergency and the activation of the Near-Site Emergency News Center by the Manager/PID, the Near-Site Emergency News Center will become the "single source" news outlet for Duquesne Light Company.
2. News announcements will be issued at least three times a day even when there is no significant change in the situation since the previous news announcement.
3. Press briefings will also be held at least three times a day. The Manager/PID or an assigned alternate will preside at these Near-Site Emergency News Center briefings and introduce the official Company spokesperson. The Supervisors of the Emergency News Center will serve as back-up to the Manager/PID. The **principal Company spokesperson** will explain the technical aspects of the developments.
4. The Supervisors of the Near-Site Emergency News Center will maintain liaison with information officers of the County, State, and Federal Governments located at the Emergency News Center and other locations.
5. The PID staff at the Willows Motel Near-Site Emergency News Center will maintain information contact with the local officials within the ten-mile radius of the Beaver Valley plant, through assigned **Government Relations Representatives,** who will offer to provide significant Company news announcements about plant conditions to a list of public officials, and serve as a Rumor Control Center.
6. Requests for special interviews will be arranged with the media by the Supervisors and the Media Relations Coordinator at the Near-Site Emergency News Center. The technical expert to be interviewed may be a representative of the Company, a government agency or an outside consultant.
7. If radiological conditions permit, an area near the plant will be designated as the site for television and news photographs of the Beaver Valley plant. The staff at the Near-Site Emergency News Center will coordinate the requests to go near the plant for pictures. The Media Relations Coordinator in cooperation with the Supervisors of the Emergency News Center will arrange for escorted visits to photographic locations.

FACILITIES AVAILABLE AT THE WILLOWS MOTEL NEAR-SITE CENTER

The Near-Site Emergency News Center has:

1. A designated meeting area of 2,800 square feet to handle media representatives and will be equipped for the use of television cameras, amplifiers and telecommunications equipment.
2. 15 acres of property providing parking accommodations and space for trailers and campers.
3. 30 motel units, each with telephone, some of which could be made available during an emergency.
4. Rest rooms on each of the three floors of the main building.
5. Capability to serve food on all three floors.
6. Helicopter landing area which would accommodate three helicopters.
7. Adequate supplies of chairs and tables to accommodate some 400 people.
8. Public address system, microphones, stage risers, movie screen.
9. Switchboard with extra capacity to add more telephone lines.
10. Ballroom area set up with tables and telephones for working press, and area with chairs and platform for press briefings. Checkroom for clothes.

11. Smaller meeting room (Captain's Quarters) on lower level (with room divider) which could be equipped as a communications center and private briefing area for public information people from the States, Counties, NRC, FEMA.
12. A supply of cots which could be used in the Captain's Quarters area if needed.

COMMUNITY CONTACT

1. Local government officials within a ten-mile radius of BVPS have a special interest in the station and must be given special considerations in an emergency.
2. Representatives from the Duquesne Light Industrial and Governmental Services Department will be given all Company announcements to be distributed or phoned to a list of local government officials throughout the emergency.
3. Upon declaration of an emergency that would activate the Near-Site Emergency News Center, the designated Industrial and Governmental contact personnel will be advised to report to the Emergency News Center where there will be facilities for contacting local officials.

TELEPHONE COMMUNICATIONS

1. In an emergency, **telephone centers** will be set up in the Corporate offices in Pittsburgh, and at the Near-Site Emergency News Center, when activated.
2. The **Manager of Consumer Services** will assign a telephone supervisor and six or more telephone contact persons to the Company Headquarters in Pittsburgh to handle incoming calls during a nuclear emergency. The phone operators will be provided by PID the latest news announcements which could be read or put into the repeat message equipment. The phone operators would be instructed to refer news media callers to PID or appropriate government agencies for follow-up.
3. The telephone supervisor will arrange a 24-hour-a-day schedule for contact persons handling incoming telephone calls.
4. The contact persons will be given brief news summaries and basic fact sheets on Beaver Valley. The news summaries should be limited to three paragraphs and will be prepared by the **Director-Media Relations**, or his designated alternate. The telephone contact persons should advise all callers that there may be delays because of the volume of calls.
5. Presumably many of the calls in the early days would be inquiries about transportation, hotels, car rentals and directions to the news center. The fact sheets would include two or three line answers to such questions. PID will provide a "Reporters' Fact Sheet," listing directions and special instructions concerning contact personnel, locations, and phone numbers.

TELECOMMUNICATIONS

1. The **Superintendent of Communications** has been designated as the Communications Coordinator for an emergency.
2. Telephone lines will connect the Near-Site Emergency News Center, Technical Support Center, and the Pittsburgh Headquarters News Center.
3. Telecopier lines between the Technical Support Center, Near-Site Emergency News Center and Pittsburgh Headquarters News Center will be established.
4. A mobile office unit with appropriate communication facilities will be located at the Willows Motel as the headquarters office of the PID at the Near-Site Emergency News Center after the center is activated. The Systems Operation and Telecommunications Department will arrange for the installation of telephones, telecopiers and radio for use in the Emergency News Center.

TRANSPORTATION

1. The Transportation Department, upon notification from the Public Information Department, will provide necessary ground transportation services in an emergency.
2. Special transportation arrangements, such as helicopter service between downtown Pittsburgh and the Willows Motel, may also be arranged.
3. Company vehicles equipped with **radios will be made available to transport Corporate Communications staff persons** to the Near-Site Emergency News Center from the Pittsburgh Headquarters. These vehicles will remain at the Near-Site Emergency News Center for the on-call use of the Company staff at the News Center.
4. In an emergency, the use of roads near BVPS could be restricted. In the event this should occur, PID will make special arrangements to take personnel, and if appropriate, news media, from the Pittsburgh area to the Near-Site Emergency News Center.
5. PID will also develop plans (and coordinate with local officials) to make available to the news media transportation to the plant site for pictures and observation, if environmental conditions permit.

CREDENTIALS

1. The **Director of Security** is responsible for the Company's security plan for the Near-Site Emergency News Center and coordinating the plan with local officials.

2. The **security plan** will call for **issuing credentials to the media** and visual check of those credentials at the Near-Site Emergency News Center.
3. In an emergency the Company will establish a **credential desk** at the Willows Motel.
4. News personnel will be asked to present identification and will be given an **identification card** listing name and news affiliation.
5. This card would serve as identification for news personnel attending briefings at the Near-Site Emergency News Center.

VISUAL AIDS

1. Enlarged pictures and diagrams of the plant's operation will be prepared and stored for use in the Near-Site Emergency News Center and at PID headquarters in Pittsburgh, to be available for press briefings.
2. Videotape cassettes of plant exterior and interior views will be prepared and stored at the Near-Site Emergency News Center and at the PID Headquarters News Center in Pittsburgh. These would be available for distribution on request to television stations.
3. Flip charts, slides, projectors and screens will be available at the Emergency News Center for the use of the experts at press briefings.

PRESS KITS

1. Press kits will be prepared by the PID staff. These include:
   a. A basic booklet "Nuclear Power, Answers to Your Questions"
   b. Photos of BVPS
   c. Diagrams of the reactor
   d. Fact sheets on BVPS
   e. A glossary of nuclear terms
2. Press kits will be stored at the Near-Site Emergency News Center, Technical Support Center, and PID headquarters in Pittsburgh for quick distribution.
3. Press kits will be distributed to all news media on request either before or during an emergency.
4. The PID headquarters office in Pittsburgh will supervise the stocking and distribution of the press kits.
5. A complete list of material available for press kits, audio-visual material and staff reference, and the location of this material, will be maintained.

FORM OF NEWS ANNOUNCEMENTS

1. All announcements will note the time and day (10 a.m., January 12, 1982).
2. All information will be attributed to either Duquesne Light Company or an employee of Duquesne Light. Designated spokespersons in the Public Information Department and Nuclear Division and officers of the Company will be the only Company personnel whose names will be used in news announcements.
3. Names of the Duquesne Light employee should be used when statements are important, represent significant changes, or are intended to rebut the statement of another agency.
4. When names of the Duquesne Light employees are used, the announcement should further identify the employee by normal corporate title and by explanation of the employee's emergency duties.
5. If an announcement is to contain information from any agency other than the Company, permission should be obtained from that agency by Company information officers.
6. News announcements should be both brief and thorough. No arbitrary limits on length can or should be set because of the uncertainty of the situation.
7. All announcements should be double spaced and typed on one side only.
8. Consistency in style and form is essential in news announcements. Company announcements from the Near-Site Emergency News Center and the Pittsburgh Headquarters News Center will be prepared in the same manner and conform to the same style.
9. Glossaries of nuclear terms and emergency terms will be used to help achieve this consistency.

SPECIAL INTERVIEWS

1. The **Media Relations Coordinator** or assigned alternate (as directed by the Supervisor of the Emergency News Center) will function as **special requests coordinator** to handle requests for special interviews, films, photos, videotapes, etc.
2. It may be assumed that many special requests will be refused either for safety or security reasons. In such cases, the reason for the refusal should be explained.
3. If the request is for an interview to develop a particular point, the coordinator will arrange the interview with the appropriate Company technical spokesperson.
4. Technical consultants on nuclear power may be hired by the Company to help staff the Emergency News Center. Interviews with these consultants will be arranged for news media when requested and agreed to by the consultant.
5. The PID coordinator should be present at all special interviews and tape the interviews for Company records.
6. The newsperson should be informed before the interview that it will be taped and a copy of the tape will be given to him if he requests one. The newsperson would be free to make his own taping at the same time.
7. Important tapings will be transcribed and filed.

HOUSING

Hotel and motel facilities in the Beaver Valley area are inadequate to handle the number of news media personnel expected during an emergency. The Greater Pittsburgh Airport area is the closest place where the number of media people expected can be accommodated. To insure an adequate supply of these rooms, the media will be referred to a list of available facilities with accommodations. This list will also be available at the Near-Site Emergency News Center and the Pittsburgh Headquarters News Center.

ENGINEERING AND CONSTRUCTION DIVISION

NUCLEAR POWER PLANT EMERGENCY RESPONSE PROCEDURE

This procedure, prepared and approved by DLC Engineering and Construction Division personnel is incorporated into the BVPS EPP as EPP/IP-9.2.

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Engineering And Construction Division

Nuclear Power Plant Emergency Response Procedure

Copy No. ________

Approved [signature] 2-20-81
BVPT Manager Date

Approved [signature] 3-2-81
V.P. E&C Division Date

DISTRIBUTION

Copy No.	Holder
1	V.P. of E&C Division
2	BVPO Proj. Manager
3	EE Dept. Head
4	ME Dept. Head
5	SE Dept. Head
6	Constr. Dept. Supt.
7	QA Manager
8	C&R Dept. Head
9	OEG Supervisor
10	BVPS Superintendent
11	Power Station General Supt.

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1.0 PURPOSE

This procedure is to be utilized by the Engineering and Construction Division personnel to provide the necessary engineering support and supplemental outside agency and division personnel services to fulfill the requirements of the approved Beaver Valley Power Station Emergency Preparedness Plan (EPP). This mobilization plan will remain in effect as long as necessary and appropriate to fulfill the Engineering and Construction Division (E&C) responsibilities and duties established by the currently approved EPP.

2.0 APPLICABILITY

This procedure shall apply to the current approved Beaver Valley Power Station EPP, i.e. most specifically implementing procedure EPP/IP - 1.5, Issue 6 (Attachment 1).

3.0 REFERENCES

3.1 Title 10 Code of Federal Regulation, Chapter I Part 50, Section 50.34 (a) (10) and Part 50, Appendix E.

3.2 BVPS - Unit 1 Final Safety Analysis Report, Appendix C.

3.3 Beaver Valley Power Station Emergency Preparedness Plan (current issue).

3.4 Engineering And Construction Division Engineering Management Procedures (where applicable).

3.5 Construction Department Nuclear Procedures (where applicable).

4.0 DEFINITIONS

4.1 Beaver Valley Power Station EPP - a plan required by federal regulation to be established by an NRC licensed nuclear power station by the licensee to further insure the safety of the general public. State and local authorities must also have similar emergency plans which are established to function in a coordinated manner with the licensees plan.

4.2 Standby Status - establishment of an available communication link between Engineering and Construction Division personnel and their supervision and outside agencies to maintain an emergency "available on-call" status during the implementation of this procedure.

4.3 Mobilization - as used in the procedure shall mean the alerting of Engineering And Construction Division personnel to be available to perform services remotely or to report to the Beaver Valley Power Station Technical Support Center, Duquesne Light Company City Office Building or other designated work location as instructed to assist in the mitigation of the emergency. This shall include the notifications, developments subsequent additions and outside agency assistance as deemed necessary.

5.0 RESPONSIBILITIES

The Engineering And Construction Division responsibilities will be fulfilled initially by the Beaver Valley Power Station Onsite Engineering Group (OEG) and, as soon as possible, supplemented by additional onsite or offsite assistance as requested by the Operations Division BVPS Engineering Director or the Vice-President Engineering And Construction Division or designee in accordance with this procedure.

5.1 Vice-President of the Engineering And Construction Division (E&C) shall have the overall responsibility for providing Engineering And Construction Division resources and personnel as specifically required by the Beaver Valley Power Station EPP and/or as detailed in this procedure. This shall include authorization of any Engineering And Construction corporate funding as deemed necessary to mitigate the emergency.

5.2 Engineering And Construction Division Department Heads and Beaver Valley Project Manager shall provide all resources and assistance to the Vice-President of the Engineering And Construction Division as necessary to fulfill the above responsibilities. Such responsibilities shall include mobilization of all necessary personnel under their supervision, utilization of all available resources or technical assistance (including outside agencies, e.g. Westinghouse NES, Stone & Webster Engineering Corporation, etc.), keeping the Vice-President Engineering And Construction Division informed of all Departmental activities and significant problems throughout the emergency including recovery and any other actions or assignments ordered by the Vice-President Engineering And Construction Division or detailed in this procedure.

5.3 OEG Supervisor (or alternate delegated OEG Project Engineer) shall be responsible for dispatching Engineering And Construction support personnel to the Beaver Valley Power Station Technical Support Center (TSC) when requested by the BVPS Shift Supervisor/Emergency Director. The OEG Supervisor shall report to the TSC and supervise the performance of the Engineering And Construction Division support personnel in support of the TSC Coordinator and the Emergency Director. The OEG Supervisor shall provide the communications link between the Engineering And Construction Departments and the onsite TSC Engineering And Construction Division support personnel. This shall include control of supplemental personnel, services and other resources as well as a ready information link to the Vice-President Engineering And Construction Division, Beaver Valley Power Station Project Manager and the Engineering And Construction Department Heads.

5.4 Other Engineering And Construction Division Personnel (not included in 5.1 thru 5.3 above) - perform duties and assume responsibilities where qualified and as assigned by the Vice-President Engineering And Construction Division, Engineering And Construction Division Department Heads, the Beaver Valley Power Station Project Manager and/or the OEG Supervisor as required by this procedure and/or the Beaver Valley Power Station Emergency Director.

6.0 INSTRUCTIONS

The following steps though listed in the probable sequence of performance may be performed in parallel where practicable to expedite mitigation of the emergency situation.

6.1.1 Upon receipt of notification of the emergency condition from the Beaver Valley Power Station TSC Coordinator with the request for engineering assistance, the Onsite Engineering Group Supervisor shall:

6.1.1.1 Alert the Vice-President Engineering And Construction Division or the Beaver Valley Power Station Project Manager or any one of the Engineering And Construction Division Engineering Department Heads (listed in order of preference - need contact only one individual who will then insure others are notified) of the notification and any associated requests.

6.1.1.2 Notify necessary available OEG personnel (See Attachment 2 Engineering And Construction personnel telephone list) to report to the TSC. Advise those OEG personnel to function, in their discipline, under the supervision of the TSC Coordinator or Emergency Director until the OEG Supervisor arrives at the TSC or assumes that supervising responsibility by notification of the TSC Coordinator or Emergency Director.

6.1.1.3 Report to the TSC Coordinator as soon as possible, conditions permitting.

6.1.1.3.1 If conditions do not permit or are considered imprudent, report to the Vice President Engineering And Construction Division Office.

6.1.1.3.2 Establish communications with OEG personnel and the TSC Coordinator or Emergency Director and perform duties from the Vice President Engineering And Construction Offices.

6.1.1.4 Assume supervision of the OEG personnel at the TSC and provide TSC Coordinator or Emergency Director with any Engineering And Construction Division assistance made available onsite and any necessary liaison required to utilize offsite Engineering And Construction Division or outside agency assistance and other resources as authorized by the Vice President Engineering And Construction Division or delegated alternate.

6.1.1.5 Continue in the capacity of OEG supervisor as stated in 6.1.1.4 above and also perform the following:

6.1.1.5.1 Schedule relief personnel to replace OEG personnel on duty using other available Engineering And Construction Division personnel on standby status through the Department Heads or alternate to provide 24 hour Engineering And Construction Division coverage throughout the emergency or until notified by the TSC Coordinator or Emergency Director that such coverage is no longer necessary. Engineering And Construction Division Department Heads should be contacted to accomplish this but they may waive this requirement if deemed appropriate.

6.1.1.5.2 Keep the Vice President Engineering And Construction or delegated alternate informed of all engineering activities requested by the Emergency Director or in progress onsite throughout the emergency or until Engineering And Construction Division emergency support is properly terminated.

6.1.1.6 When Engineering And Construction Division onsite activities are no longer required (as determined by the OEG Supervisor and the TSC Coordinator or Emergency Director), ensure all records, reports and other documentation have been or will be properly processed or filed for future processing. Release all Engineering And Construction Division personnel on duty at the site to their normal work schedules and locations after proper radiological and security clearances that are in effect have been accomplished.

6.2 The Vice President Engineering And Construction Division or delegated alternate (see 6.1.1.1 above) shall initiate the notification of the Beaver Valley Power Station Project Manager and the Engineering And Construction Division Department Heads of the implementation of the Beaver Valley Power Station EPP and of the mobilization of OEG personnel and request that all available Engineering And Construction Division personnel be placed on a standby status as follows:

6.2.1 Request the Beaver Valley Project Manager and the Engineering And Construction Division Department Heads contact their available personnel (i.e. Engineers, Technicians, Construction Specialists, Quality Assurance Engineers, Project Engineers, etc.) and establish a standby status for possible emergency engineering assistance (See Attachment 2 for telephone numbers). Note: Supplemental Engineering And Construction Division personnel may be utilized at the Beaver Valley Power Station TSC, the Engineering And Construction Division city offices or other alternate locations deemed most effective as determined by the Vice President Engineering And Construction Division or delegated alternate and the Beaver Valley Power Station Emergency Director (normally through communications between the OEG Supervisor and the respective Engineering And Construction Division Department Heads).

6.2.2 The OEG Supervisor shall obtain supplemental Engineering And Construction Division personnel by contacting the respective Department Heads (See Attachment 2 for telephone numbers). This requirement may be waived by the Department Heads when deemed prudent (e.g. where repetition would only cause delays).

6.2.3 The Vice President of Engineering And Construction Division or designated alternate and other supplemental Engineering And Construction Division personnel summoned to report will report to the Vice President Engineering And Construction Division Offices for assignment unless otherwise instructed.

6.2.4 Engineering And Construction Division Department Heads and the Beaver Valley Project Manager shall assist the Vice President Engineering And Construction Division in accomplishing emergency engineering services in their respective disciplines including the utilization of all available resources needed (including outside agencies) to mitigate the emergency. This shall include assistance and guidance to the OEG Supervisor in providing onsite and offsite engineering support.

6.3 Qualifications

All Engineering And Construction Division personnel shall be qualified in accordance with the Duquesne Light Company EMP's. The use of outside agencies must be approved by the Vice President Engineering And Construction Division or designated alternate.

7.0 RECORDS

Not Applicable

8.0 ATTACHMENTS

8.1 Beaver Valley Power Station Emergency Preparedness Plann Implementing Procedure EPP/lP-1.5.

8.2 Engineering And Construction Division Personnel Telephone List - Management.

EMERGENCY RESPONSE PLAN

WATER REACTORS DIVISIONS

WESTINGHOUSE ELECTRIC CORPORATION

This Plan, prepared and approved by Westinghouse personnel, is incorporated into the BVPS EPP as Annex A to the EPP/IP's for reference

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EMERGENCY RESPONSE PLAN
WATER REACTORS DIVISIONS
WESTINGHOUSE ELECTRIC CORPORATION

Approved J. J. Taylor
V.P and General Manager
Water Reactors Division

Date: 6/1/80

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*For internal Westinghouse use only.

Westinghouse
Water Reactors Divisions
Emergency Response Plan

1.0 PURPOSE AND SCOPE

To define the Emergency Response Plan (ERP) for the Westinghouse Water Reactors Divisions (WRD) following an abnormal occurrence involving a nuclear power plant that releases or has the potential of releasing above normal amounts of radioactivity. This plan is primarily applicable to nuclear power plants located in the United States which have a Westinghouse designed Nuclear Steam Supply System (NSSS), but may be activated for other cases contingent upon the ability of WRD to provide meaningful assistance and specific Westinghouse management approval. It is the intent of WRD to supply emergency assistance to our utility customers through this Emergency Response Plan (ERP) on a 24 hour/day, 7 day/week basis.

This plan is intended to define WRD operations as support to utilities emergency activities. Specifically this plan:

1. Defines the WRD emergency response organization, role, scope, functions and responsibilities and how it is activated.

2. Identifies the key WRD individuals to be available in the early phase of an emergency response.

3. Defines the prime WRD interfaces with involved parties.

4. Defines the WRD role in emergency news communications and the interrelationship with the utility site Emergency News Communications Center and the news media.

Emergency Response Plan Director

When activated the WRD Emergency Response plan becomes a functioning organization under the management of the plan Director. The ERP Director is a senior WRD manager who during the time the plan is

2.0 ACTIVATION OF THE EMERGENCY RESPONSE PLAN

2.1 Introduction

This activation plan has been devised so that when the Director of the Emergency Response Team receives word of an abnormal occurrence in a Westinghouse-designed nuclear power plant, he takes certain actions that trigger decisions by himself and other responsible managers. These actions (A) and decisions (D) are shown as a series of alternatives in Figure A-1, which schematically describes how the functional organizations set up in WRD will respond to a variety of situations.

2.2 Stages of an Event and Activation

Any event is treated in a series of five stages from beginning to end and all alternative actions are considered along with the decisions for response as may be required. The stages are as follows:

Stage 1: This includes initial notification from any one of a number of sources, analysis of the problem, and the decision for the depth of response.

Stage 2: This covers the activation of all, part, or none of the response units within WRD.

Stage 3: According to the magnitude of effort, the organizations in the Emergency Response Plan are made operational.

Stage 4: During this period all activated functional organizations are managed to ensure that all available resources within WRD are applied toward informing the utility, the Nuclear Regulatory Commission (NRC), and the public.

Stage 5: This step includes all actions taken which lead to deactivation of the plan.

activated has the same managerial authority as a division General Manager. The Director will report to the Vice President of WRD, the Vice President of NES, and other Westinghouse corporate management as appropriate, and will be responsible for similar high level interactions with the utilities senior manager responsible for Emergency Response and Recovery.

The ER Director's Staff consists of 5 individuals:

Deputy Director: Responsible to manage the internal operation of the Plan. The Deputy makes the initial notifications to mobilize the operation of the plan and is responsible to maintain internal communication between the functioning parts of the plan.

Emergency News Communications Manager: Responsible for external communications management as described in the Plan and in Appendix C, Emergency News Communication Center Plan.

Service Response Manager: Responsible for mobilizing and directing plant and operational services as described in the Plan and in Appendix D, Service Response Plan.

Technical Support Manager: Responsible for all technical advice provided to the Utility site and for mobilizing and managing the required technical resources as described in the Plan and in Appendix E, Technical Support Plan.

Logistics and Administration Manager: Responsible for administration and facilities and equipment needs as described in the Plan and in Appendix F, Logistics and Administration Plan.

2.3 Stage 1 - Initial Response

The first word regarding an incident may come from a number of sources in addition to the normally expected utility contact. Examples of potential reporting sources which might contact organizations within the Corporation such as an executive level, advocacy programs, a functional department, or a telephone operator are as follows:

- Nuclear Regulatory Commission
- News media (local news media, wire service etc.)
- State or local agencies
- Federal Emergency Management Administration
- Atomic Industrial Forum
- An employee

The actions and decisions described in paragraphs 2.3.1 and 2.3.2 cover any of these eventualities.

In any case, initial notification of an incident will trigger actions and decisions by either (or both) the Regional Service Manager (RSM) and the Emergency Response Plan Director (ERPD). Through all stages of an event WRD/NES Executive Management is consulted. The alternatives facing the RSM and ERP Director upon initial notification of an event are described in the following paragraphs.

2.3.1 Regional Service Manager

The Regional Service Manager receives notification of an incident from the utility and he takes the following actions:

a. Gathers available information about the incident.

b. Establishes a communications interface with the ERP Director.

c. Maintains the primary communications link with the utility until the ERP director has the WRD response organization in place.

The Regional Service Manager has the following choice of decisions:

a. Based on available-information, he judges that the ERP should be activated. He calls the ERP Director and makes his recommendation.

b. If activation in his opinion is questionable, he may call appropriate NSD managers to arrive at a joint decision. Cognizant NSD managers may then call the ERP Director, to request activation.

c. Either singly, or in joint consultation with NSD managers, is decided that only functional organizations need be activated for response to the utility problem then the ERP is not activated.

2.3.2 Emergency Response Plan Director

a. Inform Vice President WRD of incident and action he recommends.

b. Inform the Regional Service Manager of which action is to be taken.

When notified of an incident, the ERP Director has the following decisions to make:

a. He may pass on the response directly to the responsible functional organization within WRD (NSD, NTD, NFD, etc) without activating the Emergency Response Plan.

b. In consultation with the VPs WRD/NES he decides to activate the ERP and advises his Deputy Director to do so.

c. He may return the responsibility of a response to the Regional Service Manager.

d. Inform the Regional Service Manager of which action is to be taken.

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2.3.3 Special Cases

If an event takes place at a non-Westinghouse nuclear steam supply system, the WRD Emergency Response Plan may be activated by the ERP Director with the appropriate approvals. Requests for assistance and the manner of handling it are funneled through the ERP Director. In addition, a legal/commercial basis must be established to define the terms of assistance.

If an event occurs in an overseas Westinghouse Nuclear Steam Supply System, the WRD Emergency Response Plan may be activated with corporate approvals to support the in-country agreements set up by WNI/PSPD. In this case, primary interfaces will be established on a country-by country basis.

2.4 Stage 2 - Plan Activation

At this point, the decision for total or partial activation has been made. The (A)ction, (D)ecision phase involves only the Director of the Emergency Response Plan. In Stage 2 the ERP Director acts as follows:

a. He activates the Emergency News Communication Center (ENCC), whose director has the discretion to forward information as he deems necessary, with approvals of higher management and after appropriate consultation with the affected utility news communicator.

b. He activates only the WRD Communications Network, a skeleton organization of key communications and technical personnel who maintain lines of information among WRD, NRC, the pertinent utility, and the public.

c. He activates the entire Emergency Response Plan. In addition to the ENCC, he will activate the appropriate service response organizations, the Technical Support Team (in MNC 418A/415D), the Command Center (in MNC 501/502C), and the Logistics and Administration Sup port functions. Having established contact with RSM, as described in Stage 1, he will advise the RSM to maintain site contact with the utility until ERP members have arrived at their assembly points in the Nuclear Center , at which time they will be ready to respond to the situation. The Site Response Team (three specialists and an appropriate RSM) with the approval of the utility will have been dispatched to the site to participate as needed in the recovery operation and feed back information to the ERP Director.

2.5 Stage 3 - Operation of Response Organizations

There are three key persons involved during this stage of an incident. They are the Service Response Manager, the Technical Support Manager, and the Logistics and Administration Manager. The actions and decisions they must make are described in the following paragraphs.

2.5.1 Service Response Manager

The Service Response Manager has the primary responsibility for directing all service activities in coordination with the Emergency Response Plan Director. Based on the severity (urgency) and definition of the incident and the need for on-site presence of specialists from within WRD, he is faced with the following decisions to be made:

a. Activate the Site Response Team immediately and dispatch them to the site by the fastest means available, enlisting the aid of the Logistics and Administration Manager if necessary.

b. Place the Site Response Team on a standby basis with the SRT leader moving to the MNC Command Center.

c. Contact the appropriate functional (service) organization and advise it to respond as appropriate.

2.5.2 Technical Support Manager

The Technical Support Manager is responsible for technical advice relayed to the customer and for obtaining the approval of higher management as he judges necessary. He has one of the following decisions to make:

a. Fully activate the Emergency Technical Center (MNC 418/415) and assemble all members. He then serves as the group's interface with the Command Center and other functional groups, requesting whatever additional support is needed.

b. Partially activate the Emergency Technical Center to include members fully conversant only with those areas of immediate concern. The remaining members of the ETC are placed on standby.

c. Do not activate the Emergency Technical Center, but request support directly from the appropriate functional group.

2.5.3 Logistics and Administration Manager

The Logistics and Administration Manager will have the primary responsibility for supplying material, facilities, transportation, and communications links based upon the decisions and actions of other ERP members. These responsibilities may include any or all of the following:

a. Update security force on anticipated arrival/departure of news media personnel, based on depth of operation of ENCC.

b. Arrange transportation, equipment transfers, purchases, cash advances, etc., to support service response activities.

c. Rearrange furniture or other equipment within WRD facilities in support to ERP team needs.

d. Establish special communications links (telephones, wire services, intercoms, etc.) as dictated by the situation.

e. Provide for movement of information from the Information Resources Center or Records Center as needed.

f. Supply additional graphics/audio visual/video support needed by ERP operations.

g. Call for a standby situation for various support services as described in Section 2.3.2a.

h. Relinquish responsibilities to functional organizations.

2.6 <u>Stage 4 - Response by Functional Organizations</u>

During this stage the recovery process is under way. The ERP Director and the ERP staff manage all of the organizations that have been activated to assist the utilities in its efforts to control and recover from the incident. Responsibility is transferred in an orderly fashion to expedite the work of functional organizations or appropriate special project or task forces that may have been established.

2.7 <u>Stage 5 - Deactivation of Emergency Response Organization</u>

This is the final stage and formal end of the Emergency Response Plan. Responsibility is moved out of the ERP framework at such time as the ERP Director is satisfied that the emergency is terminated and the ERP is no longer needed. The ERP Director will then formally advise all involved i.e. utility, NRC, and the Westinghouse organization involved, that the plan has been deactivated.

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NUCLEAR EMERGENCY PLAN

for

CRUCIBLE, INC

This Plan, prepared and approved by Crucible, Inc. personnel, is incorporated into the BVPS EPP as Annex B to the EPP/IP's for reference

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CRUCIBLE, INC

NUCLEAR EMERGENCY PLAN

1. **Alert Phase** – Upon notification by an authorized individual from the Beaver Valley Power Plant that an emergency situation has occurred or is in progress at their plant, immediate clearance would be granted for monitoring teams to enter our plant for the purpose of checking radiation levels. The Chiefs of Fire & Plant Protection or their assistants will be on call and accompany the monitoring teams during the radiation check.

   Appropriate key management personnel of Crucible would be notified immediately of the existing situation and for authorizing any action found necessary to be taken according to the findings of the monitoring team.

   (No emergency signal will be sounded during this phase of the alert unless requested before monitoring teams arrive.)

2. **Warning Phase** - Upon notification by telephone or by personal contact by an authorized individual from the Beaver Valley Power Station that the Crucible facility is in danger of radioactive fallout, the Plant Protection supervisor on duty will immediately sound the warning signal for a period of ten (10) minutes. This warning signal will alert all employees to seek immediate shelter and to remain inside until contacted by their supervisors who will receive their instruction by telephone or radio, whichever is applicable. Only those required to work outside for short periods of time, if the operation requires, will be permitted to do so and only on the Department Supervisor's instructions. Employees are to seek shelter in the nearest locker room to their working area. Do *not* attempt to get back to your own department until all clear is sounded or upon orders from the nearest supervisor in charge.

3. **Evacuation Phase** – Upon notification that radiation levels are above the safe level for employees to remain in the plant and that evacuation of non-essential employees be made immediately and upon receiving direct orders from key management personnel, the Crucible Emergency Plan would be initiated immediately following previously established procedures for an orderly shutdown.

4. **Orderly Shutdown Phase** – Each Superintendent or his designee, would be contacted by telephone to commence with the orderly shutdown procedure and in turn would notify their personnel through their General Foreman or Turn Foreman. All employees *not* needed for assisting with the orderly shutdown, are to be directed to go to the nearest locker room from their place of work to be checked by the monitoring teams for radiation contamination. If an employee is found to be contaminated, he will be instructed to proceed with the removal of his clothes and taking a shower. Appropriate clothing will be issued at that location.

   Departmental supervision on duty will have the responsibility to see that all personnel under their jurisdiction are accounted for by releasing them from their job or remaining for shutdown purposes. Those remaining for shutdown will only be kept as long as deemed necessary to carry out shutdown procedures and then released immediately.

   All employees *not working at the time* will be instructed to remain home until officially notified to report for work.

5. **Standby Phase** – Personnel required to remain inside the plant after shutdown has been accomplished would be those persons who must constantly check necessary fixed auxiliaries within the department to avoid equipment damage and to keep continuous operation curtailed. Most of these employees could be kept inside of buildings, but there would be occasions where they would have to go outside for short periods of time. Proper Safety Equipment will be issued for outside work.

6. **Employee Evacuation** - Employees found to be *free* of radiation contamination either by decontamination procedure or otherwise, will be permitted to leave the plant. Transportation will be provided to carry the employees to a designated area outside the hazardous area. An evacuation route has been established for that purpose. Employees are to be instructed to *not* go to their automobiles as they will be contaminated and have to remain in the area for decontamination.

   Any employee permitted to leave the plant before being decontaminated will carry the radioactive material to his home and family. It is to their advantage to take all precautions before leaving the plant for his protection and his family's protection. It is essential that control be kept.

7. **All Clear Phase** – The *"all clear"* alert signal will be a three (3) minute sounding of the warning signal. The all clear will *not* be sounded until direct orders are received from the Beaver Valley Power Station management. Only after the all clear has been sounded will employees be permitted to return to their respective work areas.

International Mill Service, Linde Company, should comply with this Emergency Plan for the protection of their employees.

EMERGENCY NUCLEAR INCIDENT RESPONSE PLAN

Class I

Notification of unusual event.

Class Description

Unusual events are in process or have occurred which indicate a potential degradation of the level of safety of the plant.

Purpose

Purpose of offsite notification is to (1) assure that the first step in any response later found to be necessary has been carried out; (2) provide current information on unusual events; and (3) provide a periodic unscheduled test of the offsite communication link.

Release Potential

No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occur.

Licensee Actions

1. Promptly inform State and/or local offsite authorities of nature of unusual condition as soon as discovered.
2. Augment on-shift resources.
3. Assess and respond.
4. Close out with verbal summary to offsite authorities, followed by written summary within 24 hours,

or

5. Escalate to a more severe class.

State and/or Local Offsite Authority Actions

1. Provide fire or security assistance if requested.
2. Stand by until verbal close-out.

or

3. Escalate to a more severe class.

Crucible Inc Actions

If informed by local offsite authority, our response will be:

1. Inform company emergency plan administrator of any unusual event or conditions that exist up to this time.
2. Promptly inform key management officials of each division of the notification.
3. Stand by until verbal close-out *or* escalate to a more severe class.
4. No emergency action to be taken at this phase.

EMERGENCY NUCLEAR INCIDENT RESPONSE PLAN

Class II

Alert.

Class Description

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant.

Purpose

Purpose of offsite alert is to (1) assure that emergency personnel are readily available to respond if situation becomes more serious or to perform confirmatory radiation monitoring, if required; (2) provide offsite authorities current status information; and (3) provide possible unscheduled tests of response center activation.

Release Potential

Limited releases of up to 10 curies of I-131 equivalent or up to 10^4 curies of Xe-133 equivalent.

Licensee Actions

1. Promptly inform State and/or local authorities of alert status and reason for alert as soon as discovered.
2. Augment resources by activating on-site technical support center, on-site operations center, and near-site emergency operations center (EOC).
3. Assess and respond.
4. Dispatch on-site monitoring teams and associated communications.
5. Provide periodic plant status updates to offsite authorities (at least every 15 minutes).
6. Provide periodic meteorological assessments of offsite authorities and, if any releases are occurring, dose estimates for actual releases.
7. Close out by verbal summary to offsite authorities followed by written summary within 8 hours.

or

8. Escalate to a more severe class.

State and/or Local Offsite Authority Actions

1. Provide fire or security assistance, if requested.
2. Augment resources by activating near-site EOC and any other primary response centers.
3. Alert to standby status key emergency personnel, including monitoring teams and associated communications.
4. Provide confirmatory offsite radiation monitoring and ingestion pathway dose projections, if actual releases substantially exceed technical specification limits.
5. Maintain alert status until verbal closeout,

or

6. Escalate to a more severe class.

Crucible Inc Actions

1. Notify emergency plan administrator, emergency coordinators, and key management officials of occurrence.
2. Activate partial emergency operations center at the Personnel Building.
3. Provide escort and assistance to outside monitoring teams should they find it necessary to monitor areas of the plant for limited release of radiation.
4. Establish communications with local offsite Civil Defense EOC and the local fire and police chiefs.
5. Maintain "alert" status until verbal closeout *or* escalate to a more severe class.

Class III

Site Emergency.

Class Description

Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public.

Purpose

Purpose of the site emergency warning is to (1) assure that response centers are manned; (2) assure that monitoring teams are dispatched; (3) assure that personnel required for evacuation of near-site areas are at duty stations, if situation becomes more serious; (4) provide current information for and consultation with offsite authorities and public, and (5) provide possible unscheduled test of response capabilities in U.S.

Releases of up to 1,000 ci of I-131 equivalent or up to 10^6 ci of Xe-133 equivalent.

Licensee Actions

1. Promptly inform State and/or local offsite authorities of site emergency status and reason for emergency as soon as discovered.
2. Augment resources by activating on-site technical support center, on-site emergency operations center, and near-site emergency operations center (EOC).
3. Assess and respond.
4. Dispatch on-site and off-site monitoring teams and associated communications.
5. Provide a dedicated individual for plant status updates to offsite authorities and periodic press briefings (perhaps joint with off-site authorities).
6. Make senior technical and management staff on site available for consultation with NRC and State on a periodic basis.
7. Provide meteorological and dose estimates to offsite authorities for actual releases via a dedicated individual or automated data transmission.
8. Provide release and dose projections based on available plant condition information and foreseeable contingencies.
9. Close out or recommend reduction in emergency class by briefing of offsite authorities at EOC and by phone followed by written summary within 8 hours,

or

10. Escalate to *general emergency* class.

State and/or Local Offsite Authority Actions

1. Provide any assistance requested.
2. Activate immediate public notification of emergency status and provide public periodic updates.
3. Augment resources by activating near-site EOC and any other primary response centers.
4. Dispatch key emergency personnel, including monitoring teams and associated communications.
5. Alert to standby status other emergency personnel (e.g., those needed for evacuation) and dispatch personnel to near-site duty stations.
6. Provide offsite monitoring results to licensee and others and jointly assess them.
7. Continuously assess information from licensee and offsite monitoring with regard to changes to protective actions already initiated for public and mobilizing evacuation resources.
8. Recommend placing milk animals within 2 miles on stored feed and assess need to extend distance.
9. Provide press briefings, perhaps with licensee.
10. Maintain site emergency status until closeout or reduction of emergency class,

or

11. Escalate to *general emergency* class.

Crucible Inc Actions

1. Promptly notify emergency plan administrator, emergency coordinators, and key management officials of the change in status of occurrence.
2. Activate emergency operation center at Personnel Building to "full" emergency status.
3. Activate all Primary emergency forces at the plant and place on full standby alert.
4. Provide escort and assistance to outside monitoring teams should they find it necessary to monitor areas of the plant for radiation levels.
5. Alert all "support" services to a "standby" status.
6. Upon notification by the local off-site authority *or* the power plant authority *and* official authorization from key executives at our plant, the Nuclear Emergency Plan (warning phase only) will be immediately initiated to alert our employees to take cover inside buildings and remain there until contacted by their supervisors.
7. Notify all departmental supervisors of occurrence and place on "alert" status.
8. Maintain site emergency status until closeout or reduction of emergency class *or* escalate to *General Emergency Status.*
9. Activate "all-clear" signal only if site emergency is *closed out* or *reduction* to alert status is confirmed by off-site EOC.

Class IV

General Emergency.

Class Description

Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.

Purpose

Purpose of the general emergency warning is to (1) initiate predetermined protective actions for public; (2) provide continuous assessment of information from licensee and offsite measurements; (3) initiate additional measures as indicated by event releases or potential releases; and (4) provide current information for and consultation with offsite authorities and public.

Release Potential

Releases of more than 1,000 ci of I-131 equivalent or more than 10^6 ci of Xe-133 equivalent.

Licensee Actions

1. promptly inform State and local offsite authorities of general emergency status and reason for emergency as soon as discovered (parallel notification of State/local).
2. Augment resources by activating onsite technical support center, on-site emergency operations center, and near-site emergency operations center (EOC).
3. Assess and respond.
4. Dispatch on-site and off-site monitoring teams and associated communications.
5. Provide a dedicated individual for plant status updates to off-site authorities and periodic press briefings (perhaps joint with off-site authorities).
6. Make senior technical and management staff on site available for consultation with NRC and State on a periodic basis.
7. Provide meteorological and dose estimates to offsite authorities for actual releases via a dedicated individual or automated data transmission.
8. Provide release and dose projections based on available plant condition information and foreseeable contingencies.
9. Close out or recommend reduction of emergency class by briefing of offsite authorities at EOC and by phone followed by written summary within 8 hours.

State and/or Local Offsite Authority Actions

1. Provide any assistance requested.
2. Activate immediate public notification of emergency status and provide public periodic updates.
3. Recommend sheltering for 2-mile radius and 5 miles downwind and assess need to extend distances.
4. Augment resources by activating near-site EOC and any other primary response centers.
5. Dispatch key emergency personnel, including monitoring teams and associated communications.
6. Dispatch other emergency personnel to duty stations with 5-mile radius and alert all others to standby status.
7. Provide offsite monitoring results to licensee and others and jointly assess these.
8. Continuously assess information from licensee and offsite monitoring with regard to changes to protective actions already initiated for public and mobilizing evacuation resources.
9. Recommend placing milk animals within 10 miles on stored feed and assess need to extend distance.
10. Provide press briefings, perhaps with licensee.
11. Consider relocation to alternate EOC if actual dose accumulation in near-site EOC exceeds lower bound of EPA PAGs.
12. Maintain general emergency status until close-out or reduction of emergency class.

Crucible Inc Actions

1. Promptly notify emergency plan administrator, emergency coordinators, and key management officials of the change in status of the occurrence.
2. Provide periodic updates to all emergency plan personnel and management officials as they are provided from local offsite (EOC).
3. Provide escort and assistance to outside monitoring teams should they find it necessary to monitor areas of the plant for radiation levels. Should levels be above the safe limits, orders are received from offsite EOC to evacuate a certain part of the plant or the entire plant.
4. Notify departmental supervision to *proceed* with "shut-down" procedures for their particular area and to *stand by* for evacuation from the plant upon receiving orders from Crucible Inc (EOC). *Orders for "shutdown" must come from designated key management official. Orders for "evacuation" must come from the emergency plan administrator or his designate.*
5. Activate all support services to full active duty.
6. Recommend movement of (EOC) at Personnel Building to alternate location according to information available from offsite (EOC).
7. Initiate evacuation of all employees according to procedures established in Nuclear Emergency Plan.
8. Maintain general emergency status until closeout *or* reduction of general emergency status occurs.
9. Initiate the "all-clear" signal *only* upon receiving direct orders from the local offsite authority or Beaver Valley Power Plant author[illegible]rough the emergency plan ad[illegible]rator

WARNING SYSTEM

"TYPE"

The warning signal installed at the Midland Facility consists of four (4) Sterling Sentry "rotating-type" Model 5-V, single tone, low pitch sirens. These units are located at the following areas and each is mounted approximately (90) feet above the ground level for proper distribution of sound:

1. Top of roof at #1 Transept Building, Cold Strip (East Mill Area).
2. Top of Blast Furnace Boiler House Roof (Central District).
3. Top of TOC roof (Melting Area).
4. Top of 24" Mill roof (West Mill Area).

Upon activation for emergency, these sirens will modulate for a period of three minutes from a low to high pitch and then shut down. Activation will be by pushbutton control from Plant Protection Headquarters located at the Tenth Street Gate entrance. Each siren will have a "*manual*" control station located at ground level at each site in order that it can be individually tested for being operational.

"WARNING SIGNALS"

1. Emergency Warning Signal – This signal will consist of a series of *three 3-minute* soundings which will cover a 10-minute period of time. This will alert all employees who are outside of their buildings exposed to the open air to go inside and take cover, closing all windows and doors and to stop all air circulating fans both overhead and on sides of buildings. Once the employee is inside the building or has taken cover, employee should await further orders or instructions from the immediate supervisor for that area. Employees are *not* to go outside the building until the all-clear signal has sounded or instructed to do so by the immediate supervisor.
2. All-Clear Signal – This signal will consist of *one 3-minute* sounding of the warning signal. At this time, employees will be permitted to return to their outside work areas or enter and exit the plant if they were enroute at the time the signal was sounded.

"WARNING SYSTEM TESTS"

The warning system will be tested on the first Saturday of each month at 12:00 noon. Manual tests for each of the four (4) control stations will be conducted prior to the monthly test.

Instructions concerning the meaning of the warning system and the action to be taken by all employees are to be prominently displayed throughout the plant facilities (bulletin boards, punch clock areas, and locker rooms).

EMERGENCY SHUTDOWN

POLICY

Protection of plant production equipment and facilities in the event of major disaster is second only in priority to the protection of people. Rapid restoration of business operations and production capacity after disaster can be accomplished *only* if the plant is prepared to minimize the effects of disaster resulting from Nuclear Fallout, severe weather, fire or other causes.

In the event of a disaster, physical protection of plant property and facilities will be accomplished primarily by implementing pre-established shut down procedures. To the degree practical, further damage and loss in a disaster situation may be averted or reduced by continuing damage assessment and control, and emergency protective measures.

When time permits, it will be the responsibility of all Crucible, Inc. employees to contribute to the protection of Company property and valuable equipment before leaving his or her work station, upon receipt of a pending emergency. When warning is received, all doors, windows, and shades will be closed immediately throughout the plant for the protection of the employees.

RESPONSIBILITY

1. The Plant Emergency Plan Coordinators will be responsible for selecting individuals to authorize and monitor the shutdown of Divison facilities as required.
2. Divisional Superintendents & Departmental Superintendents have primary responsibility for accomplishing shutdown of Plant operating equipment and utilities. Their specific responsibilities include:
   a. Development of emergency shutdown and disaster control procedures.
   b. Supervise development of damage assessment and control techniques to minimize property loss and damage during a disaster.
   c. Continuing emphasis on accident prevention and personal safety to reduce or prevent injury and death, while carrying out crash shutdown and damage control procedures.

PROCEDURES

1. Emergency shutdown procedures for Plant utility services and equipment are established by the Superintendent of Utilities. Operating and maintenance supervisors along with maintenance employees on each shift are responsible for shutting equipment down.
2. Production equipment shutdown procedures are to be established by the concerned departmental superintendents, with assistance from the Divisional Superintendent of their division. The departmental superintendent designates and instructs primary and alternate responsible employees for shutdown responsibilities.
3. General instructions and guidelines for the protection of equipment is the sole responsibility of the Departmental Superintendent. Methods and procedures best suited to the equipment involved are to be developed within each department for the protection of valuable and sensitive tools, instruments, and other materials. Precious metals, valuable tools, original drawings and prints are to be stored in locked storage or are evacuated depending on the time available and the nature of the anticipated disaster.
4. Instructions stating what employees are to do and what safety precautions they are to take should be posted on all bulletin boards throughout the entire plant. If shelter areas are available in a department, they should be posted and directional signs posted to guide employees to the shelter areas. Designated employees should be assigned to standby fire fighting hose and equipment to take immediate action in case a fire breaks out. Each responsible area supervisor is to report to his department superintendent upon completion of his shutdown.
5. In cases of severe weather conditions, mobile equipment should be stored inside a building or at least along protected sides of buildings. This would only be in case of extremely heavy winds or tornado alert.

*This page runs over to the next one.

EMERGENCY SHUTDOWN TIME-STAINLESS DIVISION

Department	Number of Hours or Days to Shutdown Dept. or Minimize Operations in case of an Emergency	Number of Employees Required to Shutdown the Department in an Emergency (Minimum)	Number of Employees Required to be on Standby by the Dept. after Shutdown is Complete (Minimum)	Telephone Extension and Title of Person to Contact to Initiate Shutdown Procedures
HOT STRIP MAINTENANCE	8 Hours	3	2	Gen. Fore. – 2660 2659
COLD STRIP MAINTENANCE	8 Hours	5	2	Gen. Fore. – 2668 2723
ELECTRIC MELTING & AOD	8 Hours	4 Fce. Oper. & AOD 48 Emp. at notification. 21 Emp. immediate release. Reduce force as heats are tapped. 6 Emp. needed until shutdown is complete.	3	Supt. – 2506
COLD STRIP FINISHING	2 Hours	2	0	2734 – 2715
COLD STRIP – A & P	4 Hours	38 to 48 Employees depending on level of operation.	2	Supt. – 2730 Gen. Fore. – 2717 Turn Fore. – 2719 2721 – 2663
COLD STRIP ROLL GRINDING	30 Minutes	1	0	Supt. – 2729
ROLLING DEPT.	3 Hours	3	0	Fore. – 2164
ELECTRIC FURNACE PITS	9 Hours	1 Hour needed to handle equipment after last heat is poured. 6	0	Turn Fore. – 2517
CONTINUOUS CASTING	2 Hours	4	0	Supt. – 2539 Turn Fore. – 2543
CENTRAL CRAFTS DEPT.	Immediate		2/per turn	Supt. – 2481-2482
Pipe Shop	"	Regular Crew – 1st turn		Gen. Fore.-2470-2471
Brick Mason	"			Gen. Fore.-2488
Structural Shop	"	Skeleton Crew – 2nd turn		Gen. Fore. – 2501
Rigger Shop	"	Skeleton Crew – 3rd turn		
Welder Shop	"			
Carpenter Shop – Labor	"			Gen. Fore. – 2486
Paint – Sheeters	"			
Machine Shop	"			Gen. Fore. – 2476
Foundry	"			
Electric Construction	"			Gen. Fore. – 2499
HOT STRIP	8 Hours	2	3	Supt. – 2646 Turn. Fore. – 2644
PRODUCTION CONTROL	2 Hours	4	0	Supv. – 2700-2680-2681
STAINLESS WAREHOUSE	1 Hour	1	1	Mgr.-2661 until 5 pm Fore.-2661 until 5 pm
TECHNICAL SERVICES (Customer Building)	Immediate	0	0	Mgr.-2395-2396

EMERGENCY SHUTDOWN TIME-STAINLESS DIVISION

Department	Number of Hours or Days to Shutdown Dept. or Minimize Operations in case of an Emergency	Number of Employees Required to Shutdown the Department in an Emergency (Minimum)	Number of Employees Required to be on Standby by the Dept. after Shutdown is Complete (Minimum)		Telephone Extensio and Title of Person to Contact to Initiat Shutdown Procedur
ENVIRONMENTAL CONTROL	40 Minutes	14	0		Director – 2288 Lab – 2475 Sr. Supt. – 2474
UTILITIES			Operators-Maintenance		Div. Supt. – 2465 Supt. – 2445
River Pumps	Continuously	2	2/shift	2/day	Gen. Fore. – 2450
Boiler House	Continuously	4	2/shift	2/day	Substation
Blowing Room	Until fce. is banked.	1	1/shift	0	
Power House	Continuously	2	2/shift	1/shift	Gen. Fore. – 2447
Auxiliary Pump House	Operate	1	1/shift	0	Power
Filter Plant	Operate	1	1/shift	0	
Substations	Operate until mills are down.	11	0	1/shift	
Supervision		7	2/shift	1/shift	
TOTALS		149	65		

EMERGENCY SHUTDOWN TIME-ALLOY DIVISION

DEPARTMENT	Number of Hours or Days to Shutdown Dept. or Minimize Operations in case of an Emergency	Number of Employees Required to Shutdown the Department in an Emergency (Minimum)	Number of Employes Required to be on Standby in the Dept. after Shutdown is Complete (Minimum)	Telephone Extensio and Title of Person to Contact to Initia Shutdown Procedu
CHEMICAL LABORATORIES				
1. VMP Lab	15 Minutes	1	0	2329 – 2330
2. A&P Lab	15 Minutes	1	0	2720
3. Electric Fce. Lab	15 Minutes	1	0	2505
4. Coke Plant Lab	15 Minutes	1	0	2602
5. TOC Lab	8 Hours	3	0	2549 -- 2441
METALLURGICAL LAB	15 Minutes	1	0	Supv. – 2433
HEAT TREAT				Supt. – 2634
Operations	4 Hours	4	2	Gen. Fore. – 2751
Maintenance	4 Hours	3	1	Turn Fore.–2638-2
10-12-14" MILL				Supt.–2758-2759
Operations	Immediate	Regular Crew	0	Gen. Fore.–2759-2
Maintenance	8 Hours	2	1/per turn	Maint.–2736-2228-2735
#2 HEAT TREAT		–		
Operations / Maintenance	1 Hour	2	0	Maint.–2736-2735-2228
24" BAR MILL				Supt.
Operations	30 Minutes	9	0	Gen. Fore.–2740-2
Maintenance		2		Maint.–2736-2735-2328
#1 Conditioning				
Operations / Maintenance	1 Hour	2	0	" " "
BLOOMING MILL) Operations	1 Hour – Maint.	5 – Maintenance		Supt. – 2525
BILLET YARD) &	2 Hours – Oper.	8 – Operations	1/per turn	Asst. Supt. – 2527
BILLET MILL) Maintenance	1 Hour	5		Gen. Fore. – Maint. 2530
AGRICULTURAL DISC	4	3	1/per turn	Supt.–2618-2617 Gen. Fore. – 2619 Maint. – 2620
BAR FIN. EAST				Supt. – 2634
Operations	30 Minutes	4	0	Gen. Fore.–2750-2
Maintenance		2	0	Foreman–2639-26
LOCOMOTIVE REPAIR	Immediate 0	0	0	Gen. Fore.–2813
BLAST FURNACE				
Operations / Maintenance	14 Hours	15 – Operating 5 – Maintenance	2 Foremen per turn 4 Maint. per turn	Supt. -2568-2569 Maint. Fore. – 2570-2600

EMERGENCY SHUTDOWN TIME-ALLOY DIVISION

Department	Number of Hours or Days to Shutdown Dept. or Minimize Operations in case of an Emergency	Number of Employees Required to Shutdown the Department in an Emergency (Minimum)	Number of Employees Required to be on Standby in the Dept. after Shutdown is Complete (Minimum)	Telephone Extension and Title of Person to Contact to Initiate Shutdown Procedures
COKE PLANT Operations Maintenance	3 Hours.	30 Operating 4 Maintenance	22 per 24-Hr. Period 4 Maintenance	Supt. – 2591 BP Engr. – 2607 Battery Fore. – 2595 Gen. Fore. – 2593 Maint. Fore. – 2594-2600
TOC DEPT.	2 Hr. Emergency 16 Orderly	20 50	0 3	Supt. – 2555 Turn Fore. – 2638-2640
CONDITIONING DEPT.				
#2 Cond.	30 Minutes	Regular Crew	2	Supt. – 2587
#4 Cond.	30 Minutes	Regular Crew	0	Turn. Fore. – 2585
Plow Yard	1 Hour	Regular Crew	0	
TRANSPORTATION DEPT.	16 Hours Until all Melt Shops have tapped out and teemed.	15 2 – 3-Man Crews for Blast Fce. 2 – 4-Man Crews for TOC and Elec. Fce. 1 – Supervisor	0	Asst. Supt. – 282
PRODUCTION CONTROL (Customer Service Center)	Immediate	0	0	Supv. – 2387
VACUUM MELT PRODUCTS	8 Hours	18	3	Supt. – 2364 Foreman – 2353
TOTALS		176	64	

APPENDIX 2
EVACUATED COMMUNITIES AND EVACUATION ROUTES

I. PURPOSE

To establish evacuation routes for the evacuation of the general public, institutions, and industry from political subdivisions, as follows:

A. 5-Mile Radius

1. Georgetown Borough	– South on T.R. 278 to S.R. 168; South on S.R. 168 to S.R. 18; South on S.R. 18 to assembly area Washington County.
2. Glasgow Borough	– North on T.R. 278 to S.R. 168; North on S.R. 168 to assembly area Lawrence County.
3. Hookstown Borough	– South on S.R. 168 to S.R. 18; South on S.R. 18 to assembly area Washington County.
4. Industry Borough	– East on S.R. 68 to S.R. 60; North on S.R. 60 to S.R. 51; North on S.R. 51 to S.R. 251; North on S.R. 251 to S.R. 551; East on S.R. 551 to S.R. 18; North on S.R. 18 to assembly area Lawrence County.
5. Midland Borough	– North on S.R. 168 to assembly area Lawrence County.
6. Ohioville Borough	– North on S.R. 168 to assembly area Lawrence County.
7. Shippingport Borough	– South on S.R. 168 to S.R. 18; South on S.R. 18 to assembly area Washington County.
8. Brighton Township	– North on S.R. 60 to S.R. 51; North on S.R. 51 to S.R. 251; North on S.R. 251 to S.R. 551; East on S.R. 551 to S.R. 18; North on S.R. 18 to assembly area Lawrence County.
9. Center Township (W. of S.R. 60)	– South on S.R. 60 to U.S. 22/30; East on U.S. 22/30 to Interstate 79; South on Interstate 79 to assembly area Washington County.
10. Greene Township	– South on S.R. 278 to S.R. 168; South on S.R. 168 to S.R. 18;

South on S.R. 18 to assembly area
Washington County.

–OR–

Southeast on U.S. 30 to Interstate 79;
South on Interstate 79 to assembly area
Washington County.

11. Potter Township – South on S.R. 18 to assembly area
Washington County.

12. Raccoon Township – South on S.R. 18 to assembly area
Washington County.

B. 5-10 Mile Radius

1. Aliquippa Borough – South on S.R. 60 to U.S. 22/30;
East on U.S. 22/30 to Interstate 79;
South on Interstate 79 to assembly area
Washington County.

–OR–

South on S.R. 51 to Interstate 79;
South on Interstate 79 to assembly area
Washington County.

2. Beaver Borough – East on S.R. 68 to assembly area
Butler County.

3. Bridgewater Borough – East on S.R. 68 to assembly area
Butler County.

4. Fallston Borough – North on Darlington Road to S.R. 251;
North on S.R. 251 to S.R. 551;
East on S.R. 551 to S.R. 18;
North on S.R. 18 to assembly area
Lawrence County.

5. Frankfort Springs Borough – South on S.R. 18 to assembly area
Washington County.

6. Monaca Borough – South on S.R. 51 to Interstate 79;
South on Interstate 79 to assembly area
Washington County.

7. Patterson Heights Borough – North on Darlington Road to S.R. 588;
East on S.R. 588 to assembly area
Butler County.

8. South Heights Borough – South on McGovern Blvd. to Shousetown Road;
South on Shousetown Road to S.R. 51;
South on S.R. 51 to Interstate 79;
South on Interstate 79 to assembly area
Washington County.

9. S. Beaver Township
(S. of S.R. 251) – North on S.R. 168 to assembly area
Lawrence County.

10. Brighton Township (E. of S.R. 60) – North on S.R. 60 to S.R. 51; North on S.R. 51 to S.R. 251; North on S.R. 251 to S.R. 551; East on S.R. 551 to S.R. 18; North on S.R. 18 to assembly area Lawrence County.

11. Center Township (E. of S.R. 60) – South on S.R. 51 to Interstate 79; South on Interstate 79 to assembly area Washington County.

–OR–

South on Constitution Blvd. to McGovern Blvd.; South on McGovern Blvd. to Shousetown Road; South on Shousetown Road to S.R. 51; South on S.R. 51 to Interstate 79; South on Interstate 79 to assembly area Washington County.

12. Chippewa Township (S. of S.R. 251) – North on S.R. 51 and S.R. 60 to S.R. 251; North on S.R. 251 to S.R. 551; East on S.R. 551 to S.R. 18; North on S.R. 18 to assembly area Lawrence County.

13. Hanover Township – South on S.R. 18 and S.R. 168 to assembly area Washington County.

–OR–

East on U.S. 30 to Interstate 79; South on Interstate 79 to assembly area Washington County.

14. Hopewell Township – South on S.R. 60 to U.S. 22/30; East on U.S. 22/30 to Interstate 79; South on Interstate 79 to assembly area Washington County.

15. Independence Township – East on S.R. 151 to S.R. 60; South on S.R. 60 to U.S. 22/30; East on U.S. 22/30 to Interstate 79; South on Interstate 79 to assembly area Washington County.

16. Patterson Township – North on Darlington Road to S.R. 588; East on S.R. 588 to assembly area Butler County.

17. Vanport Township – North on S.R. 60 to S.R. 251; North on S.R. 251 to S.R. 551; East on S.R. 551 to S.R. 18; North on S.R. 18 to assembly area Lawrence County.

C. ZONE III

1. Ambridge Borough	– South on S.R. 65 to Interstate 79. North on Interstate 79 to assembly area Butler County.
2. Baden Borough	– North on S.R. 989 to S.R. 228; East on S.R. 228 to assembly area Butler County.
	–OR–
	South on S.R. 65 to Interstate 79; North on Interstate 79 to assembly area Butler County.
3. Conway Borough	– North on S.R. 989 to S.R. 228; East on S.R. 228 to assembly area Butler County.
4. E. Rochester Borough	– East on S.R. 68 to assembly area Butler County.
5. Freedom Borough	– East on S.R. 228 to assembly area Butler County.
6. New-Brighton Borough	– North on S.R. 65 to assembly area Lawrence County.
7. Rochester Borough	– East on S.R. 68 to assembly area Butler County.
8. Harmony Township	– North on S.R. 989 to S.R. 228; East on S.R. 228 to assembly area Butler County.
	–OR–
	South on S.R. 65 to Interstate 79; North on Interstate 79 to assembly area Butler County.

ANNEX C
EVACUATION

I. PURPOSE

To establish policies and procedures for an evacuation of an approximate 10-mile radius of the Beaver Valley and Shippingport Nuclear Power facilities in the event of a general emergency at either facility.

II. SCOPE

This Annex covers, in addition to the general public, institutions and industry within all or part of the following:

A. 5-Mile Radius (Primary) Political Subdivisions

BOROUGHS	TOWNSHIPS
Georgetown	Brighton (W. of S.R. 60)
Glasgow	Center (W. of S.R. 60)
Hookstown	Greene
Industry	Potter
Midland	Raccoon
Ohioville	
Shippingport	

B. 5-10 Mile Radius (Secondary)

BOROUGHS	TOWNSHIPS
Aliquippa	S. Beaver (S. of S.R. 251)
Beaver	Brighton (E. of S.R. 60)
Bridgewater	Center (E. of S.R. 60)
Fallston	Chippewa (S. of S.R. 251)
Frankfort Springs	Hanover
Monaca	Hopewell
Patterson Heights	Independence
South Heights	Patterson
	Vanport

C. ZONE III

BOROUGHS	TOWNSHIPS
Ambridge	Harmony
Baden	Rochester
Conway	
East Rochester	
Freedom	
New Brighton	
Rochester	

III. ASSUMPTIONS

It is assumed that up to fifty-percent (50%) of the population in the evacuation zone(s) will seek housing on their own initiative, with relatives, friends, or commercial facilities outside the area.

IV. CONCEPT OF OPERATIONS

A. An evacuation may be precautionary, (24-hrs. to complete evacuation), or immediate, (6-hrs. to complete evacuation).

B. School would not be in session at the start of a precautionary evacuation. If schools are in session at the beginning of an immediate evacuation, disposition of the faculty and students shall be in accordance with Appendix 1 to this Annex.

C. Actions to be taken by agencies in support of an evacuation are covered in their respective Annexes. Specific instructions for the public and supporting forces (including maps) are contained in Appendices to this Annex as follows:

1. Schools
2. Evacuated communities and evacuation routes
3. Traffic control points
4. Reception points
5. Transportation support
6. Institutions (other than public schools)
7. Industry

V. RESPONSIBILITIES

A. In accordance with P.L. 1332, Act 323-1978, evacuations shall be ordered by the Governor. However, if time is of the essence and the Governor has not so ordered, the County Commissioners may recommend that an evacuation be ordered.

B. All activities in support of the evacuation shall be coordinated by the County Emergency Management Coordinator for Federal, State, and County forces; and by local Emergency Management Coordinators for local forces. (If for any reason a local Coordinator is not available to carry out his responsibilities, they shall be carried out by the County Coordinator.)

EVACUATION ROUTE MAP

||||||||| = Exit Route

⊙ = Police Road Block

ALTERNATE HEADQUARTERS PLAN

POLICY

If the Company's main facility is ever seriously damaged, it will be necessary to set up temporary office operations at a different location.

Alternate sites will be selected for use (1) in case of a local disaster, affecting only the main office facility and (2) in the event of widespread disaster, necessitating relocation to a remote site.

PROCEDURE

1. **In the event of a "local disaster"**, company executives will meet at the *Personnel Building* located on the east corner of ninth street and Midland Avenue. Radio communication will be established immediately upon notification. Certain office personnel will be called in as needed upon requests. Adequate telephone communication service and office space are available at this site.
2. In the event of a "widespread disaster" Company executives and their designated assistants will be advised to proceed to the Primary Alternate Headquarters site immediately which will be the *Crucible Management Club* located on the Industry Fairview Road in Industry Borough. Radio communications will be established immediately and certain office personnel will be called in as may be needed on request.
3. Office Service Manager will provide extra telephone service, food, lodging and office supplies as needed.
4. Plant Protection will provide the necessary personnel to handle radio communications and to keep order at the site whichever it might be.
5. Superintendent of Transportation will provide transportation from the plant to either headquarters site *if* personal vehicular travel would be hampered for various reasons depending on the type of emergency or disaster occurring.
6. The Alternate Headquarters will be activated as soon as the Presidents or their designee deems that an emergency seriously threatens the continuity of business conduct at their regular headquarters.
7. If the designated Alternate Headquarters is determined to be uninhabitable, other locations may be selected at the time depending upon conditions, state of communications, and travel.

INTENTIONALLY BLANK

RADIATION EMERGENCY PLAN

for

MACKINTOSH-HEMPHILL PLANT

This Plan, prepared and approved by Mackintosh-Hemphill personnel, is incorporated into the BVPS EPP as Annex C to the EPP/IP's for reference

RADIATION EMERGENCY PLAN

For

MACKINTOSH-HEMPHILL MIDLAND PLANT

May 1981

Approved:

R.J. Ansevin
Plant Manager
Mackintosh-Hemphill
Midland Plant

RADIATION EMERGENCY PLAN
FOR
THE MACKINTOSH-HEMPHILL MIDLAND PLANT

PURPOSE

This plan is designed to provide guidance to Mackintosh- Hemphill personnel for responding to a notification of an emergency event at the Beaver Valley Power Station. This response may include actions for the protection of plant personnel such as sheltering or evacuation (with the attendent controlled shutdown of the plant).

SCOPE

The Duquesne Light Company's Beaver Valley Power Station, when complete, will consist of two light water pressurized reactor (PWR) electric generating units. Unit 1 is complete and is licensed to operate. Unit 2 is scheduled for start-up in 1986. Each unit has a design net.output of 852 megawatts. Located on the same site is the Shippingport Atomic Power Station (SAPS), a 60 megawattt light water breeder reactor. SAPS is owned by the Federal Government and operated by Duquesne Light. SAPS is scheduled to be decommissioned by the late-1980's.

The uncontrolled release of radioactive materials is the main hazard resulting from an accident at the Beaver Valley site. Radioactive materials are produced as a consequence of the atomic fission process. Physical barriers and administrative controls minimize the release of these radioactive materials to the environment. In an accident, the physical barriers may be damaged and/or control over the radioactive material may be lost or reduced, potentially resulting in the uncontrolled release of radioactive material. The actual level of risk to individuals beyond the site boundary, specifically at the Mackintosh-Hemphill Midland Plant, and the need for protective actions for these individuals would depend on the nature and magnitude of the incident and the prevailing meteorological conditions.

Because of the close proximity of the Mackintosh-Hemphill Midland Plant to the Beaver Valley site, in the unlikely event of a serious accident some form of protective action for plant employees would likely be required. It is therefore prudent to develop and maintain an emergency preparedness stature for such occurrences.

INTERFACES WITH OTHER PLANS

Duquesne Light Company is responsible for performing all onsite emergency measures necessary to contend with an emergency at the Beaver Valley site, and to notify offsite emergency authorities of the occurrence and the need for offsite action, if any, and to keep offsite officials apprised of the plant status.

Beaver County Government is responsible for performing emergency measures to minimize the consequences of the event on the health and welfare of its residents, including the employees of industrial complexes in the County. State agencies serve in a support or advisory role. The agency of the Beaver County Government charged with coordinating all offsite activities in the event of an emergency is the Beaver County Emergency Management Agency (BCEMA). In such an emergency, Mackintosh-Hemphills primary interface will be with BCEMA.

DEFINITIONS

1. Alert Phase -- that phase of emergency response commencing with initial notification by BCEMA. Involves supervisory and management personnel primarily. Emergency signals will normally not be sounded during the alert phase. Corresponds to the Unusual Event and/or Alert emergency classifications used by County and facility personnel.

2. Warning Phase -- that phase of emergency response commencing with notification by BCEMA that offsite protective actions, such as sheltering, are necessary. This notification may be direct from BCEMA, or may be indirect through the County's public warning system. This action may be required upon occurrence of an emergency classified as a Site Emergency or General Emergency.

   When notified, Mackintosh-Hemphill management personnel will direct the sounding of plant emergency signals and direct that all employees seek immediate shelter and to remain inside until otherwise directed by supervision.

3. Evacuation Phase -- this phase of emergency response commences with notification by BCEMA that evacuation of areas surrounding the Beaver Valley site is necessary. Such evacuations will commence immediately upon the direct orders of key Mackintosh-Hemphill personnel. All employees not needed to assist with the controlled shutdown will be evacuated.

4. Controlled Shutdown -- this phase of emergency response commences concurrently with the evacuation phase. In this phase, Mackintosh-Hemphill supervisory personnel will direct the rapid controlled shutdown. Under slowly-building emergency situations, there may be time for a more orderly, perhaps normal, shutdown. Department supervision are responsible to ensure that remaining personnel are accounted for and for holding personnel only as long as is necessary. All employees not at work when the emergency is declared will remain at home until notified to report.

5. Standby Phase -- this phase of the emergency response commences with termination of the controlled shutdown and continues until re-entry to affected areas is authorized by County officials. In this phase, minimal staffing will remain in force to maintain necessary fixed auxilliary equipment and performing other necessary actions (such as tightening hearth tie bars) in order to avoid larger equipment damage. If necessary, a personnel rotation system will be implemented to minimize the over-exposure of any single group of employees.

6. All Clear Phase -- this phase commences with notification from BCEMA that the emergency condition has been terminated and that employees may be permitted to return to their respective work areas.

7. **Protective Actions** -- those emergency measures taken after an uncontrolled release of radioactive material, for the purpose of preventing or minimizing radiological exposures.

CONCEPT OF ACTION

Tables 1, 2, 3, and 4, on the following pages present the concept of action to be taken by Mackintosh-Hemphill personnel, the coinciding actions by facility and State and County agencies, and a definition of the four events and the level of risk from each.

PLANT EVACUATION

When directed by Beaver County authorities, Mackintosh- Hemphill management will direct the evacuation of non-essential plant employees.

These employees will evacuate from the Midland Plant in their personal automobiles. Ridesharing is encouraged. Those without personal transportation will receive transportation assistance from municipal and county resources. Police traffic control in Midland will direct evacuees towards Route 168 North, and onward to the designated assembly area at the Lawrence Valley Plaza in Lawrence County. (However, once beyond the affected area, evacuees may chose not to continue to this assembly area, but rather proceed to the homes of friends or relatives beyond the affected area.) The route to this assembly area is:

North on Route 168 to Route 422 (Lawrence County),
East on Route 422 to Route 65,
South on Route 65 to assembly area.

Necessary decontamination will be performed at the assembly area.

EMERGENCY NUCLEAR INCIDENT RESPONSE PLAN

Condition	Duquesne Light Actions	Pennsylvania/Beaver County Emergency Management Agencies Actions	Mackintosh-Hemphill Midland Actions
Notification of Unusual Event. **Class Description** Unusual events are in progress or have occurred which indicate a potential degradation in the level of safety of the plant. **Purpose** Purpose of offsite notification is to (1) assure that the first step in any response later found to be necessary has been carried out; (2) provide current information on unusual events; and (3) provide a periodic unscheduled test of the offsite communication link. **Release Potential** No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occur. **Offsite Protective Action** None Required	1. Promptly inform State and local offsite authorities of nature of unusual condition as soon as discovered. 2. Augment on-shift resources. 3. Assess and respond. 4. Close out with verbal summary to offsite authorities, followed by written summary within 24 hours, -or- 5. Escalate to a more severe class.	1. Provide fire or security assistance if requested. 2. Standby until verbal close-out. -or- 3. Escalate to a more severe class.	If informed by Beaver County Emergency Management Agency, our response will be: 1. Inform company emergency plan administrator of any unusual event or conditions that exist up to this time. 2. Promptly inform key management officials of each division of the notification. 3. Stand-by until verbal close-out or escalate to a more severe class. 4. No emergency action to be taken at this level.

EMERGENCY NUCLEAR INCIDENT RESPONSE PLAN

Condition	Duquesne Light Actions	Pennsylvania/Beaver County Emergency Management Agencies Actions	Mackintosh-Hemphill Midland Actions
Alert **Class Description** Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. **Purpose** Purpose of offsite alert is to (1) assure that emergency personnel are readily available to respond if situation becomes more serious or to perform confirmatory radiation monitoring if required; (2) provide offsite authorities current status information; and (3) provide possible unscheduled tests of response center activation. **Release Potential** Limited releases of up to 10 curies of I-131 equivalent or up to 10,000 curies of Xe-133 equivalent. **Offsite Protective Actions** Unlikely	1. Promptly inform State and local authorities of alert status and reason for alert as soon as discovered. 2. Augment resources by activating onsite technical support center, and onsite operations support center. 3. Assess and respond. 4. Dispatch onsite monitoring teams and associated communications. 5. Provide periodic plant status updates to offsite authorities. 6. Provide periodic meteorological assessments to offsite authorities and, if any releases are occurring, dose estimates for actual releases. 7. Close-out by verbal summary to offsite authorities followed by written summary within 8 hours. -or- 8. Escalate to a more severe class.	1. Provide fire or security assistance, if requested. 2. Augment resources by activating emergency operations center (EOC) and any other primary response centers. 3. Alert to standby status key emergency personnel, including monitoring teams and associated communications. 4. Provide confirmatory offsite radiation monitoring and ingestion pathway dose projections, if actual releases substantially exceed technical specification limits. 5. Maintain alert status until verbal close-out, -or- 6. Escalate to a more severe class.	1. Notify emergency plan administrator, emergency coordinators, and key management officials of the occurrence. 2. Place the emergency operations center on standby. 3. Provide escort and assistance to outside monitoring teams should they find it necessary to monitor areas of the plant for limited release of radioactive material. 4. Establish communications with Beaver County Emergency Management Agency (775-0880) and the local fire and police chiefs. 5. Maintain alert status until verbal close-out or escalate to a more severe class.

Condition

Site Emergency

Class Description

Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public.

Purpose

Purpose of site emergency warning is to (1) assure that response centers are manned; (2) assure that monitoring teams are dispatched; (3) assure that personnel required for evacuation of offsite areas are at duty stations; (4) provide current information for and consultation with offsite authorities and the public; and (5) provide possible unscheduled test of response capabilities in U.S.

Release Potential

Releases of up to 1000 curies of I-131 equivalent or up to 1 million curies of Xe-133 equivalent.

Offsite Protective Actions

Possibility

Duquesne Light Actions

1. Promptly inform State and local authorities of site emergency status and reason for emergency as soon as discovered.
2. Augment resources by activating onsite technical support center, onsite operations support center, and near-site emergency operations facility (EOF).
3. Assess and respond.
4. Dispatch onsite and offsite monitoring teams and associated communications.
5. Provide a dedicated individual for plant status updates to offsite authorities and periodic press briefings.
6. Make senior technical and management staff onsite available for consultation with NRC and State on a periodic basis.
7. Provide meteorological and dose estimates to offsite authorities for actual releases via a dedicated individual or automated data transmission.
8. Provide release and dose projections based on available plant condition information and foreseable contingencies.
9. Close-out or recommend reduction in emergency class by briefing of offsite authorities at the EOF and by phone followed by written summary within 8 hours,

-or-

10. Escalate to general emergency class.

Pennsylvania/Beaver County Emergency Management Agencies Actions

1. Provide any assistance requested.
2. Activate immediate public notification of emergency status and provide public periodic updates.
3. Augment resources by activating EOC and any other primary response centers.
4. Dispatch key emergency personnel, including monitoring teams and associated communications.
5. Alert to standby status other emergency personnel (eg: those needed for evacuation) and dispatch personnel to near-site duty stations.
6. Provide offsite monitoring results to licensee and others and jointly assess them.
7. Continuously assess information fom the facility and offsite monitoring with regard to changes to protective actions already initiated for public and mobilizing evacuation resources.
8. DER/BRP may recommend placing milk animals within 2-miles on stored feed and assess the need to extend distance.
9. Provide press briefings, perhaps with licensee.
10. Maintain site emergency status until verbal close-out,

-or-

11. Escalate to general emergency class.

Mackintosh-Hemphill Midland Actions

1. Promptly notify emergency plan administrator, emergency coordinators, and key management officials of the change in the status of occurrence.
2. Activate the emergency operations center. Establish communications with Beaver County Emergency Management Agency (775-0880)
3. Activate all primary emergency forces at the plant and place on full standby alert.
4. Provide escort and assistance to outside monitoring teams should they find it necessary to monitor areas of the plant for limited release of radioactive material.
5. Alert all support services to a standby status.
6. Upon notification by the Beaver County Emergency Management Agency and official authorization from key executives at our plant; the Nuclear Emergency Plan (Warning Phase only) will be immediately initiated to alert our employees to take cover inside buildings and remain there until contacted by their supervisors.
7. Notify all departmental supervisors of the occurrence and place on alert status.
8. Maintain site emergency status until verbal close-out or escalate to a general emergency class.
9. Activate all-clear signal only if site emergency is closed-out or reduction to alert status is confirmed by county EOC.

EMERGENCY NUCLEAR INCIDENT RESPONSE PLAN

Condition

General Emergency

Class Description

Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.

Purpose

Purpose of the general emergency warning is to (1) initiate predetermined protective actions for public; (2) provide continuous assessment of information from facility and from offsite measurements; (3) initiate additional measures as indicated by event releases or potential releases; and (4) provide current information for and consultation with offsite authorities and the public.

Release Potential

Releases of more than 1000 curies of I-131 equivalent or more than 1 million curies of Xe-133 equivalent.

Offsite Protective Actions

Likely

Duquesne Light Actions

1. Promptly inform State and local authorities of general emergency status and reason for emergency as soon as discovered.
2. Augment resources by activating onsite technical support center, onsite operations support center, and near-site emergency operations facility (EOF).
3. Assess and respond.
4. Dispatch onsite and offsite monitoring teams and associated communications.
5. Provide a dedicated individual for plant status updates to offsite authorities and periodic press briefings.
6. Make senior technical and management staff onsite available for consultation with NRC and State on a periodic basis.
7. Provide meteorological and dose estimates to offsite authorities for actual releases via a dedicated individual or automated data transmission.
8. Provide release and dose projections based on available plant condition information and foreseable contingencies.
9. Close-out or recommend reduction in emergency class by briefing of offsite authorities at the EOF and by phone followed by written summary within 8 hours.

Pennsylvania/Beaver County Emergency Management Agencies Actions

1. Provide any assistance requested.
2. Activate immediate public notification of emergency status and provide public periodic updates.
3. Recommend sheltering for 2-mile radius and 5 miles downwind and assess need to extend distances.
4. Augment resources by activating EOC and any other primary response centers.
5. Dispatch key emergency personnel, including monitoring teams and associated communications.
6. Dispatch other emergency personnel to duty stations within 5 mile radius and alert all others to standby status.
7. Provide offsite monitoring results to licensee and others and jointly assess them.
8. Continuously assess information fom the facility and offsite monitoring with regard to changes to protective actions already initiated for public and mobilizing evacuation resources.
9. DER/BRP may recommend placing milk animals within 10 miles on stored feed and assess the need to extend distance.
10. Provide press briefings, perhaps with licensee.
11. Maintain general emergency status until verbal close-out.

Mackintosh-Hemphill Midland Actions

1. Promptly notify emergency plan administrator, emergency coordinators, and key management officials of the change in the status of occurrence.
2. Provide periodic updates to all emergency personnel and management officials as data is received.
3. Provide escort and assistance to outside monitoring teams should they find it necessary to monitor areas of the plant for radiation levels. Should levels be above safe limits, consider evacuation.
4. Notify departmental supervision to proceed with shut-down procedures and to standby for evacuation from the plant upon receiving orders from the Mackintosh-Hemphill EOC.
5. Activate all support services to full active duty.
6. Initiate evacuation of all employees according to procedures established in the Nuclear Emergency Plan.
7. Maintain general emergency status until verbal close-out or escalate to a general emergency class.
9. Activate all-clear signal only on direct orders from Beaver County Emergency Management Agency.

Appendix A

EMERGENCY SHUTDOWN

POLICY

Protection of plant production equipment and facilities in the event of a major disaster is second only in priority to the protection of plant employees. Rapid restoration of business operations and production capacity after the disaster can be accomplished only if the plant is prepared to minimize the effects of disaster resulting from severe weather, fire, radiological incidents, chemical accidents, or other causes.

In the event of a disaster, physical protection of plant property and facilities will be accomplished primarily by implementing pre-established shutdown procedures. The only loss experienced as a result of this action is that of production during the period of suspended operations.

However, should a serious health hazard exist, an accelerated shutdown will be performed. Good judgement shall be used to determine which equipment must be sacrificed and to what degree. In the unlikely event total and immediate personnel evacuation is necessary, the extreme application of this procedure is utilized. This extreme case requires complete disregard for damaged equipment and/or production. All equipment and energy sources would be turned off or made secure promptly and the plant site evacuated of all personnel as rapidly as possible. Methods of restoration, if any, will be determined after the emergency condition has been brought under control and the emergency response has entered the All Clear Phase.

With specific regard to radiological incidents originating at the Beaver Valley Power Station, it is unlikely that the extreme case would ever by required. The most serious postulated accidents are the result of deterioration of less serious incidents. Since the emergency preparedness plan for that facility requires notification of offsite authorities for the lesser events, in all but the rarest of occurrences there would be time for an accelerated—rather than an extreme shutdown. In addition, most postulated accidents do not involve a continuous release of radioactivity. Thus, re-entry of selected personnel to the plant following passage of the radioactive plume, to perform damage control and assessment, may minimize extensive damage.

EQUIPMENT INVOLVED & NORMAL OPERATIONS

The plant consists principally of four production sections, exclusive of administrative personnel, security forces, transportation forces, etc. Those are the Open Hearth, Foundry, the Annealer, and the Machining sections. This procedure addresses those particular areas. All other plant personnel will be included with the initial evacuees.

The Open Hearth, when operating, is on a three-shift basis, the Electric Furnace works on a two-three shift basis, and the Annealer sections work on a three-shift per day basis. The machining section presents no difficulty since shutdown time for that section is minimal, yet enabling immediate restart of production following the All Clear.

The Melt Department consists of one open hearth furnace and requires six to twelve hours per heat and one electric furnace. The Annealer section consists of thirty-one annealers. Each operates over periods ranging over several days on individual, separate schedules.

The normal personnel complement is given below. These numbers are approximate to allow for normal fluctuations.

Daylight Shift	130	(lower on weekends/holidays)
Afternoon Shift	90	
Night Shift	50	
	270	Total

INITIAL CONDITIONS

The Midland Plant is operating normally, on any shift, during any day of the week, with the normal security force on duty. All personnel and equipment are functioning in the numbers and in any or all of the manners described above.

NOTIFICATIONS

Notification of an emergency situation, occurring beyond the perimeter of the Midland Plant, will normally come from the Beaver County Emergency Management Agency, but may come from state or Federal agencies. All such notifications shall be verified by calling back the notifying party at the directory listed telephone number. (For BCEMA, this is 775-0880.)

In the event of a radiological incident at the Beaver Valley Power Station, the operators of that facility will provide technical information and action recommendations to the Bureau of Radiological Protection, Department of Environmental Resources of the Commonwealth of Pennsylvania (DER/BRP). DER/BRP will evaluate this data and make appropriate recommendations to State and County officials.

<u>Case I</u>

In this case, notification will be primarily for information only. No protective actions are required for the general public, or Mackintosh-Hemphill employees at this time. OR, the emergency situation, currently is not serious, but is expected to deteriorate in the near future—advance warning is being provided of an potential future need for protective action.

<u>Case II</u>

A quickly developing situation necessitates immediate evacuation of essentially 100% of plant personnel. A standby-crew may remain if appropriate means are taken to control their exposure to the hazard.

PROCEDURE

<u>Case I</u>

Upon receipt of the Case I alert notification requesting normal plant shutdown and evacuation of non-essential personnel:

1. Notify the Midland Plant Manager (643-8602 or residence 378-4765) and the Plant Superintendent of Maintenance

(643-4971 or Residence 216 532-3116) of the notification, and request authorization to initiate this procedure.

2. The Plant Manager or his designee will confirm the initiation of the emergency plan and will initiate the following plant actions:

   2.1 Notify all supervisory personnel on-shift at the Open Hearth, Foundry, Annealer, and Machining sections to commence an immediate orderly shutdown in accordance with normal shutdown procedures.

   2.2 Sound the alarm, utilizing the plant whistles and sirens, and request all non-essential personnel to proceed to their vehicles and leave the site as soon as possible and await future notice as to when their return will be required.

<u>Case II</u>

If a Case II alert is received, complete (100%) evacuation is requested as soon as possible, all personnel will be informed to shutdown all equipment and energy sources, at the direction of their supervision, and evacuate, as follows:

3. All personnel evacuating the site should be advised to do so in an orderly fashion so as to avoid delays or possible accidents.

4. Close all doors, windows, and shutdown all ventilation systems.

Note: Access through doors shall be kept to only that necessary for shutdown operations or personnel safety.

5. The initial normal standby shutdown force will consist of the following:

Open Hearth	8	(when operating)
Electric Furnace	1	(winter only, 0 othertimes)
Annealer	1	
Machining	0	
Electricians	2	
	12	Total

6. If government or outside agency representatives, such as radiation monitoring personnel report onsite during an emergency, they should report to the senior supervisor in the standby shutdown force. All recommendations related to personnel safety with regard to any hazards and protective actions should be made through the senior supervisor at the plant. Any protective clothing, devices, medicine, or monitoring devices, provided by outside agencies shall be utilized to the extent which will render beneficial effects.

7. The senior supervisor will keep management informed of the status of the plant and any authorization requests for protective actions originating from outside agencies, if applicable.

8a. Open hearth heats vary from six to twelve hours, on the average from beginning of melt to tap. When the open hearth has been tapped, approximately 30 minutes must be spent for miscellaneous duties including tap into city water. Following this, the furnace may be left for 24 hours attended by one individual, who will tighten tie bars each half hour and recheck at 12-hour intervals (which may require repeats of 1/2 hour tightening of the tie bars). When completely cooled, the standby force of this section may be reduced to zero.

8b. Electric Furnance may be simply shut-off, with provisions for water cooling.

9. If possible, at least three individuals, one at the annealer, and two maintenance men will remain on duty until properly relieved or ordered to evacuate. These individuals should be provided with any available protective devices/clothing.

TIME REQUIRED

It is anticipated that the plant force can be reduced to a dozen men within 30 minutes for a Case I emergency. For a Case II emergency with complete evacuation, evacuation can be completed within the same length of time.

RESTORATION

The method of restoration to normal plant operations will be largely dependent upon the specific emergency condition experienced; therefore, no specific procedure can be provided. The general procedure will be as follows:

- The plant management will survey the site to assess the condition of the equipment. Based upon the "as-found conditions" a normal paint start-up will commence, or the necessary repair work will be initiated.

- Financial assistance for recovery will also depend upon the specific emergency condition experienced. For emergencies created by industrial accidents at neighboring facilities or nearby hazardous material transportation accidents, losses due to damaged equipment and lost production may be recoverable from the operators of the industrial complexes or transportation system.

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EMERGENCY PLAN

for

MAJOR INJURY INVOLVING RADIOACTIVE CONTAMINATION

ALIQUIPPA HOSPITAL

This Plan, prepared and approved by Aliquippa Hospital personnel with the assistance of BVPS and SAPS personnel, is incorporated into the BVPS EPP as Annex D to the EPP/IP's for reference

EMERGENCY PLAN

For

MAJOR INJURY INVOLVING RADIOACTIVE CONTAMINATION

Agreement

Between

Beaver Valley Power Station

Shippingport Atomic Power Station

and

Aliquippa Hospital

Approved:

Aliquippa Hospital

JULY, 1981

I. PURPOSE AND SCOPE

This plan addresses the general actions to be taken by Aliquippa Hospital personnel to prepare for and treat a radiologically contaminated injured patient received from either the Beaver Valley Power Station or from the Shippingport Atomic Power Station.

This plan is primarily directed towards minimizing the spread of contamination from the patient to hospital personnel, the general public, and to hospital facilities and equipment. The plan only generally addresses the medical treatment to be rendered. The applicability of this plan to other categories of patients received from the Beaver Valley or Shippingport Atomic Power Stations is as follows:

- o This plan does not apply to injured patients, received from either of the two facilities, who are not contaminated. These patients will be handled in accordance with normal Aliquippa Hospital emergency room directives.

- o For patients who are injured and have been reported to have serious internal contamination or who have been seriously overexposed, but who are not contaminated will be handled in accordance with normal Aliquippa Hospital emergency room directives and the general guidance of section IV of this plan.

- o Power station personnel who have been seriously contaminated or overexposed , but who have no other life-threatening physical injury will not normally be transferred to the Aliquippa Hospital for treatment. If because of unforeseen circumstances such patients are received, They should be handled in accordance with the general guidance of this plan and the Aliquippa Hospital emergency room directives.

Appendix B to this plan provides background information relavent to radiological contamination and the handling of contaminated injured personnel.

II. RESPONSIBILITIES AND AUTHORITY

Although this plan specifically addresses the handling of contaminated injured personnel, the basic hospital policies and directives for emergency treatment of patients remain unchanged. It is understood, the provisions of this plan notwithstanding, that the treatment of affected individuals will be carried out under the direction of emergency room and other attending physicians as would be the case for any emergency injury requiring treatment.

The role of Duquesne Light Radiological Control personnel will be limited to that of assisting hospital personnel with the monitoring and control of radioactive contamination at the direction of the attending physician. DLC personnel will be responsible for the handling and disposal of any radioactive wastes created and the restoration of affected hospital facilities and equipment to their pre-emergency condition.

III. PROCEDURE TO BE FOLLOWED BY HOSPITAL PERSONNEL

1. NOTIFICATION

Upon notification by control room personnel from the Shippingport Atomic Power Station or the Beaver Valley Power Station, the Director of Nurses or Supervisor will:

A. Communications:

1) Make notation of possible types of injury to patient, and any radiological information available.

2) Notify Dr. Bansidhar, or the Emergency Room physician-briefly reviewing injuries and any radiological information reported.

a) Notify services as advised by physician.

3) Telephone operator is to call personnel as directed by supervisor.

   a) (7-3 shift) - Immediately notify Director of Nurses, Supervisor and chairman of disaster program or alternate.

      1 Notify Administrator.

      2 Director of Nurses or Supervisor will re-assign staff personnel to carry on emergency requirements and regular house coverage.

   b) (3-11 and 11-7 shift) - telephone operator will immediately notify trained personnel - list to be provided by Director of Nurses and kept at switchboard.

      1 Telephone Network - See Appendix A.

2. PREPARATION OF AREA

A. Equipment to accumulate immediately.

1) Upon notification, supervisor will send relief for the Emergency Room nurse on duty.

2) A carriage with pad, an extra carriage pad and pillow, and an I.V. stand will be taken to the basement floor by Emergency Room orderly.

   a) The second pad is for the "post" table.

   b) The carriage and pad will be available for transporting patient after decontamination and emergency therapy.

3) If a heart attack is suspected, an emergency room carriage with pad will be made available in "post" room.

   a) Emergency Room portable Oxygen apparatus to be made available in area.

1 Additional O_2 cylinders available in storage shed (notify maintenance).

4) If condition indicates, based on notification:

a) Have solutions of 5% Glucose in Saline and water available.

b) Narcotics may be obtained by an R.N. from a nursing unit.

5) Bring crash cart from Physical Therapy.

B. Preparation Of Treatment Area

1) Locate cart of radiological supplies strategically.

2) Prepare area at the entrance to the morgue and the post rooms.

a) Place pad and pillow on post table and cover with plastic.

1 If carriage is to be used, cover entire carriage with plastic. Allow the plastic to drape to the floor.

b) Cover floor-herculite (heavy plastic material) and/or blotting paper.

c) Surround post table with rows of herculite or blotting paper.

d) All equipment in post room which cannot be removed is completely covered with pieces of plastic.

f) At entrance to post room prepare step-off area by placing approximately 20 sq. feet of blotting paper outside the post room door.

1 Completely outline this blotting paper with radiation warning tape (distinctively colored tape used to show the line of demarcation between clean and contaminated areas.)

g) Place 2 rows of blotting paper from the entrance of post room on top of "step-off" area through the outside door and to end of the edge of ramp.

1 Use pieces of tuck tape (grey or green colored) placed randomly to hold paper in place.

h) Attach a large plastic bag to the wall just inside the post door for contaminated clothing.

i) Attach a second plastic bag, for shoe covers, to the wall between outside door and "post" door, near step-off pad.

j) Cover walls with yellow plastic (bag marked walls) if time permits.

3) All personnel responsible for giving direct patient care will don appropriate covering:

a) Hood

b) Jump Suit

c) Gloves (1 pair cloth and 1 pair rubber gloves, or surgical gloves)

d) Radiological shoe covers or hospital shoe covers from the operating room.

e) Mask

4) Medical aseptic technique will be adhered to in the post room and upon removing appropriate coverings when leaving the room.

5) All supplies from cart will be taken into "post" room as indicated by extent of patients injury — if in doubt, keep supplies available on cart near the room.

a) Additional fracture equipment and dressings available in storeroom.

6) Request all unnecessary personnel to leave the area. Restrict access to the corridor and ramp area until such time as the patient is in the the post room, the blotting paper is removed, and the area has been monitored by Duquesne Light personnel

3. PATIENTS ARRIVAL

A. Patient taken into post room and placed on table by hospital personnel.

1) If patient comes in a contaminated patient carrier, the patient will be treated in carrier.

B. Hospital personnel, under direction of Duquesne Light personnel will, starting at ramp site, roll up the blotting paper at entrance areas.

1) If difficulty is encountered removing tape have Duquesne Light personnel remove it.

2) Paper is rolled from under side and immediately placed into large plastic bag - top sealed with radiation warning or tuck tape and tagged.

3) Area will be monitored by Duquesne Light Personnel.

C. Patient will be cared for as condition warrants. All contamination will be removed by Duquesne Light personnel when physician so indicates. Patients condition will guide the procedure to be followed for decontamination.

D. All persons will be frisked and monitored with assistance from Duquesne Light personnel prior to leaving the post room.

E. Patient will be moved as condition indicates and upon recommendation of attending physician and Duquesne Light health physics representative.

F. Duquesne Light personnel will supervise the terminal care of material and equipment, and restoration of the morgue and the post room to their pre-emergency condition.

4. MINIMIZING THE EXPOSURE OF HOSPITAL PERSONNEL

A. Overexposed or Internally Contaminated, Injured Patients

In the case of a patient exposed to excessive radiation, or internal contamination no measures are necessary to protect hospital premises or personnel.

B. Contaminated Patient

The potential radiation exposure to hospital personnel from a contaminated patient will, of necessity, depend on the nature and extent of the contaminant. A potentially more serious problem would be the transfer of contamination from the patient to hospital personnel. This transferred contamination, if not removed, could enter the individual's body via a break in the skin, or by ingestion or inhalation. Techniques to minimize the spread of contamination include:

1) All personnel entering the designated area should wear appropriate clothing, preferably disposable, as directed.

2) Air conditioning systems and forced air heating systems in the treatment areas should be shut-off, if possible, to minimize air currents which could spread contamination to other areas.

2) Splashing of decontamination solutions should be avoided.

3) Hospital personnel should move to clean areas only after monitoring and release by the Duquesne Light personnel.

4) Patient will be moved only upon recommendation of attending physician and Duquesne Light health physics representative.

5) Supplies are passed from clean areas to potentially contaminated areas. Reverse flow should not be

allowed unless materials have been surveyed and found to be clean.

6) The entry into the designated area, of all non-essential personnel including family, visitors, and administrative personnel should be restricted until decontamination is complete and the patient has been moved to a ward or private room.

7) Hospital personnel working on patient should keep their hands away from exposed skin (eg: forehead) on their own bodies.

8) All waste material must be bagged for disposal by Duquesne Light personnel.

IV. PROCEDURES FOR INTERNAL CONTAMINATION/OVEREXPOSURES

1. Internal Contamination

A. Duquesne Light health physics representative should obtain nose swipes for subsequent radiological evaluation before any indicated decontamination is performed.

B. All biological material (urine, sputum, feces, blood) taken from the patient should be retained for subsequent radiological evaluation. Such material should be considered to be contaminated until released by the Duquesne Light health physics representative.

C. Obtain biological samples for analysis at the direction of the attending physician. Blood, urine, and feces should be collected as soon as possible, and periodically thereafter.

D. Perform other treatment as directed by attending physician. As outlined in Appendix B, such treatment may include:

1) Administration of diuretics and/or laxatives

2) Administration of chelating agents

2. External Overexposure

Treatment of the overexposed individual will depend on, the magnitude of the overexposure, and the extent and location of the exposure site. Treatment for the radiation injury need not be immediate. Treatment for accompanying side-effects should be in keeping with normal medical practice.

A. Blood samples should be taken and laboratory analyses performed as soon as possible to provide biological indicators of the extent of the radiation damage. As a minimum, the following data should be obtained:

   1) Differential and absolute white blood cell and platelet counts; hematocrit reading; blood picture; hemoglobin

   2) Electrolyte balance

   3) Lymphocyte culture chromosome analysis

   The tests identified in 1) should be repeated several times during the first six hours for exposures in excess of 50-100 rem, and less often for lower exposures.

B. All urine should be collected for analysis, until otherwise directed by attending physician. Samples should not be mixed and should be clearly labeled as to date and time of collection.

C. The patient should be surveyed for radiation, and appropriate exposure control methods established for hospital personnel if necessary.

APPENDIX A

Aliquippa Hospital

SHIPPINGPORT DISASTER TEAM PHONE NUMBERS

Mr. Boon	378-3517 - 857-1224 or Designated Administrative Person.
Dr. S. Zernich	378-0822 - 378-3841
Dr. Bansidhar	843-2963 - 857-1255
Dr. Pantalone	378-4512 - 378-3166
Mrs. Brush	774-6827 - 857-1251
Mrs. Gerber	343-7944 - 857-1230
Alt. Mrs. Kurlak	857-1238
N. O. Supervisor	857-1236
Mrs. Bovalino	846-3314 - 857-1275
Barb Heiser	775-1313 - 857-1275
Debbie Kolder	266-7127 - 857-1275
Anita Taylor	378-3934 - 857-1281
Carol Lewis	375-7875 - 857-1277
Mary Sochor	774-1914 - 857-1236
Cindy Konitsney	378-8827 - 857-1255
Pete Tranelli	375-4610
E. R. Orderly	857-1255

Note: The hospital switchboard and Nursing office maintains a copy of this phone list current. Refer to that listing for up-to-date numbers.

APPENDIX B

BACKGROUND INFORMATION

I. SITUATION

At the Beaver Valley Power Station and the Shippingport Atomic Power Station, as would be expected at any industrial facility, there exists the possibility of a range of personnel accidents. These accidents range from simple injuries which can treated by onsite first aid personnel, to more severe accidents that require immediate medical attention to save the life of the injured person.

Many individuals at the Beaver Valley and Shippingport Atomic Power Stations work with radioactive materials or work in areas where exposure to radiation is probable. The probability of an accident, in which the radiation exposure received by the individual or the amount of loose radioactive material (radioactive contamination) on the individual's skin or inside his body (by ingestion or inhalation) would constitute the primary health risk is very low. However, other personnel injuries requiring offsite medical attention must be expected to occur. Further, it is prudent to assume that some of these injuries may occur in radioactively contaminated areas and that the urgency for medical treatment may not permit removal of the contamination prior to transfer to an offsite hospital. The urgency associated with injury takes precedence over the urgency associated with the contamination and that the first aim must be to save the life and preserve the vital functions of the patient. Treatment of the contamination comes only second.

Nonetheless, since radioactive contamination and the attendent radiation exposure from contamination poses some health risk, it is necessary to make arrangements to control the treatment of such injured contaminated persons, in order to minimize unnecessary exposure to hospital personnel, ambulance personnel, and other patients or members of the general public who might come in contact with the injured person. This plan establishes the controls necessary to minimize the spread of radioactivity while ensuring access to timely medical treatment for contaminated injured personnel.

II. SPECIALIZED TREATMENT

Duquesne Light has made arrangements with the Department of Radiation Health of the University of Pittsburgh and the Presbyterian-University Hospital for specialized medical treatment of serious radiological injuries. Duquesne Light has also made arrangements with Drs N. Wald and A. Spritzer, radiation medicine consultants, for medical advice related to the treatment of radiological injuries to Beaver Valley Power Station personnel.

Station personnel who have been injured and who require immediate medical treatment and who are contaminated will be transferred to the Aliquippa Hospital for treatment. Station personnel who have been seriously contaminated or overexposed, but who have no injuries requiring urgent medical treatment to preserve vital functions, will be transferred to the Presbyterian-University Hospital for long-term treatment and follow-up.

Aliquippa Hospital personnel may call upon the specialized advice of the Department of Radiation Health or Drs Wald and Spritzer in the treatment of contaminated-injured personnel from the Beaver Valley Power Station. Telephone numbers are listed on Appendix C.

III. RADIOLOGICAL INJURIES

Radiological injuries can be broadly categorized into three classes. These are excessive overexposure to external radiation, ingestion or inhalation of radioactive material into the body (internal contamination) in excess of regulatory standards, and external skin contamination. These injuries can occur individually or in combination with the others.

1. INDICATIONS FOR ACTION

A. External Exposure

The primary indication for action will be the initial estimate of the exposure reported by the facility where the exposure occurred. This exposure can involve the whole body (whole body exposure) or parts of the body such as the hands or feet (partial body exposure).

1) Whole Body Exposure Greater than 5 but less than 10 rem

The action in this exposure range is administrative. No medical treatment or evaluation is necessary.

2) Whole Body Exposure Between 10 and 25 rem

The details of the abnormal exposure should be brought to the attention of a radiation medicine physician. The need, extent, and nature of any clinical, biological, or biochemical examinations will be determined by the physician.

3) Whole Body Exposure Greater than 25 rem

The patient should be examined by a radiation medicine physician.

4) Partial Body Exposure

Treatment for partial body exposure, other than that to the face, is seldom urgent, thus there is time for consultation with radiation medicine physicians.

The higher the estimated dose, the more important becomes the need for accurate dose estimation through a combination of clinical, biological, and physical assessments. It is generally accepted that clinical signs, namely nausea, vomiting, erythema, fever, anorexia; and biological signs, primarily leukopenia, are unlikely to occur at whole body exposures less than 100 rem and are unlikely to be observed for 3-4 hours. Therapy, other than psychotherapy, is generally not required until whole body exposure is between 100-600 rem.

B. Internal Contamination

Internal contamination can enter the body by the processes of inhalation or ingestion, or external contamination can enter the body via an opening in the skin. It is unlikely that an accurate clinical or biological estimate can be made without specialized radiochemical analyses. The best estimate of the exposure will necessarily come from the power station.

If internal contamination greater than the annual limit of intake is suspected or reported, a radiation medicine physician should be consulted, or the patient transferred to a specialized treatment center. See paragraph II of this appendix.

The treatment will, of course, depend on the circumstances of the internal contamination. Generally, attempts are made to minimize the uptake of the radioactive material by the body by accelerating biological elimination (laxatives and diuretics), chemical removal (chelating agents), or by prevention of uptake by administration of stable isotopes of the same species as the radioisotopes ingested or inhaled (potassium iodide to prevent thyroid uptake of Iodine-131). Biological samples are necessary to evaluate the amount of radioactive material eliminated, in order to estimate the internal radiation exposure.

C. External Contamination

It is unlikely that the nature or extent of radiological contamination on a contaminated worker from either of the power stations would pose a danger to the worker or the hospital staff. Normally, the presence of radioactive contamination will simply indicate the need for special procedures to avoid the spread of contamination through the treatment area and to those responsible for handling the patient.

When skin contamination exists, decontamination must be performed. However, any severe physical injuries (eg: trauma and burns) are likely to be more important than possible radiation injuries. The basic and most important procedure is simply to wash with soap and copious quantities of water. Care must be taken not to abrade the skin, and decontamination by this procedure must stop before the appearance of skin abrasion. In the case of a contaminated wound, washing with copious amounts of water should be done and bleeding should be promoted. Care must be taken not to transfer contamination from the skin to the wound in the course of aseptic cleansing.

2. ADDITIONAL GUIDANCE

A. Management of Persons Accidentally Contaminated with Radionuclides. National Council on Radiation Protection (NCRP-65)

B. Manual on Early Medical Treatment of Possible Radiation Injury, International Atomic Energy Agency Safety Series No. 47

C. The Principles and General Procedures for Handling Emergency and Accidental Exposures of Workers, International Commission on Radiological Protection (ICRP-28)

APPENDIX C

Supplementary Telephone Numbers

Beaver Valley Power Station Control Room	643-8001/8002
Shippingport Atomic Power Station Control Room	643-4600
Presbyterian-University Hospital Emergency Room	(412) 647-3333
Department of Radiation Medicine	(412) 647-3595
Drs. Wald and Spritzer Radiation Medicine Consultants	(412) 372-3590

PROCEDURES FOR TRANSFERRING RADIATION CASUALTIES

to the

RADIATION EMERGENCY RESPONSE PROGRAM

PRESBYTERIAN-UNIVERSITY HOSPITAL

This Plan, prepared and approved by RERP personnel of P-U Hospital, is incorporated into the BVPS EPP as Annex E to the EPP/IP's for reference

I. SCOPE

The Radiation Emergency Response Program (RERP) of the Department of Radiation Health of the University of Pittsburgh maintains and provides, as agreed upon in contracts with industrial organizations which utilize radiation and radioactive materials, a radiation emergency response capability.

The Radiation Emergency Response Program (RERP) utilizes facilities (including personnel, equipment, and supplies) available through the Department of Radiation Health and Presbyterian-University Hospital of the University of Pittsburgh as agreed upon in the aforementioned contracts.

The services of the RERP will include, but are not limited to:

A. Facilities for evaluation and treatment of persons with actual or potential health problems related to radiation or radioactive material exposure.

B. Maintenance, periodic testing and operation of equipment adequate to ensure effective use of such facilities.

C. Equipment and personnel, to the extent practicable, available for dispatch to provide technical services to affected locations outside the University area, if necessary.

D. Use of the University Whole Body Radiation Counter and other radiation exposure measurement devices and techniques.

E. Use of chromosome examination studies for radiation exposure evaluation.

F. Written reports presenting individual patient findings applicable to radiation exposure.

G. Emergency monitoring and/or accident dosimetric evaluation at the radiation emergency location if practicable and when called upon to do so.

H. Assistance and cooperation in the presentation of regulatory reports, press releases and other similar informational statements.

I. Assurance of regulatory licensing requirements to deal with radiation emergency casualties.

J. Means for providing a reasonable, but limited amount of in-patient hospital beds and facilities for emergency purposes.

K. Recommending or obtaining specialized facilities beyond this scope.

L. Consultation services and training to key plant personnel in the utilization of the University RERP.

II. PURPOSE

These RERP procedures are to be distributed to the industrial users of the RERP to aid them in transferring radiation casualties for health physics and/or medical evaluation and/or treatment resulting from radiation exposure and/or radioactive contamination with or without other associated injury.

Such casualty transfers should be accomplished with the following objectives:

A. Rapid transfer of casualties to University facilities;

B. Compliance with regulatory statutes;

C. Minimizing radiation exposure to the casualties;

D. Minimizing radiation exposure to medical and non-medical personnel participating in the transfer;

E. Containment of associated radioactive contamination;

F. Effective transmittal of relevant important information to University personnel;

G. Protection of the general public;

H. Protection of hospital functions.

III. RERP-ALERT

A. Definition

RERP-ALERT refers to those actions, procedures, and preparations made by University personnel in anticipation of receiving radiation casualties within the immediate future (a matter of hours).

B. Objective

The RERP-ALERT has as its objective the mobilization of RERP personnel, facilities, and supplies prior to the arrival of radiation casualties at the Presbyterian-University Hospital.

C. Initiation of RERP-ALERT

1. Initiation of the RERP-ALERT is the responsibility of the industrial contractor who is sending, or may send in the immediate future, radiation casualties to the Presbyterian-University Hospital.

2. The RERP-ALERT is initiated by telephoning one of the following:

   a. Emergency Room (all emergency calls)
      Presbyterian-University Hospital
      647-3333

   b. Secretary, Radiation Medicine Department
      Presbyterian-University Hospital
      Low-Level Radiation-Monitoring Facility
      647-3595

   c. Secretary, Radiation Safety Office
      Graduate School of Public Health
      624-2728

   d. Administrative Assistant, Radiation Center
      Scaife Hall
      647-3495

   e. University Health Center Operator (as a last resort)
      647-2345

3. The person initiating the RERP-ALERT should give the following information:

   a. Name of industrial organization and specific plant;

   b. Name and phone number of responsible person initiating the RERP-ALERT;

   c. A definite statement clarifying whether radiation casualties are being forwarded to Presbyterian-University Hospital, time of arrival and number of such casualties;

   d. A description of the medical problems;

e. A brief description of the radiological problems, to include: 1) whether it is an internal or external radiation exposure, 2) whether contamination is present, 3) the type of contamination;

f. More technical information should be given only to the members of the professional staff of the RERP;

g. The name and telephone number of an indivdual that can be readily contacted by us for transfer of further information.

IV. RADIOACTIVE CASUALTY TRANSPORTATION

A. Casualty transportation is the responsibility of the industrial contractor.

B. Information pertaining to the casualty should be relayed to a member of the professional staff of RERP prior to the casualty's arrival at the Presbyterian-University Hospital or should accompany the patient.

C. The casualty should be delivered to the Rear Emergency Exit Doors of the Emergency Department on the Ambulance Drive of Presbyterian-University Hospital (see Figure I).

D. The vehicle bringing the contaminated patient will be surveyed for radioactive contamination prior to release.

E. If practical, efforts should be made to decontaminate exposed individuals prior to leaving the plant site.

F. If practical, casualties contaminated with radioactive material should be wrapped in plastic sheeting to minimize the dispersion of contamination.

G. If practical, areas of skin contamination on the patient's body should be marked and isolated by plastic covering.

H. The RERP staff should be notified that actual casualties are being forwarded to the Presbyterian-University Hospital.

I. Communications between transporting ambulances and Presbyterian-University Hospital can be achieved through the Emergency Medical Service Operations Center (EMSOC) situated at Presbyterian-University Hospital. EMSOC's primary communication channels are on VHF frequencies 155/340 and 155/400.

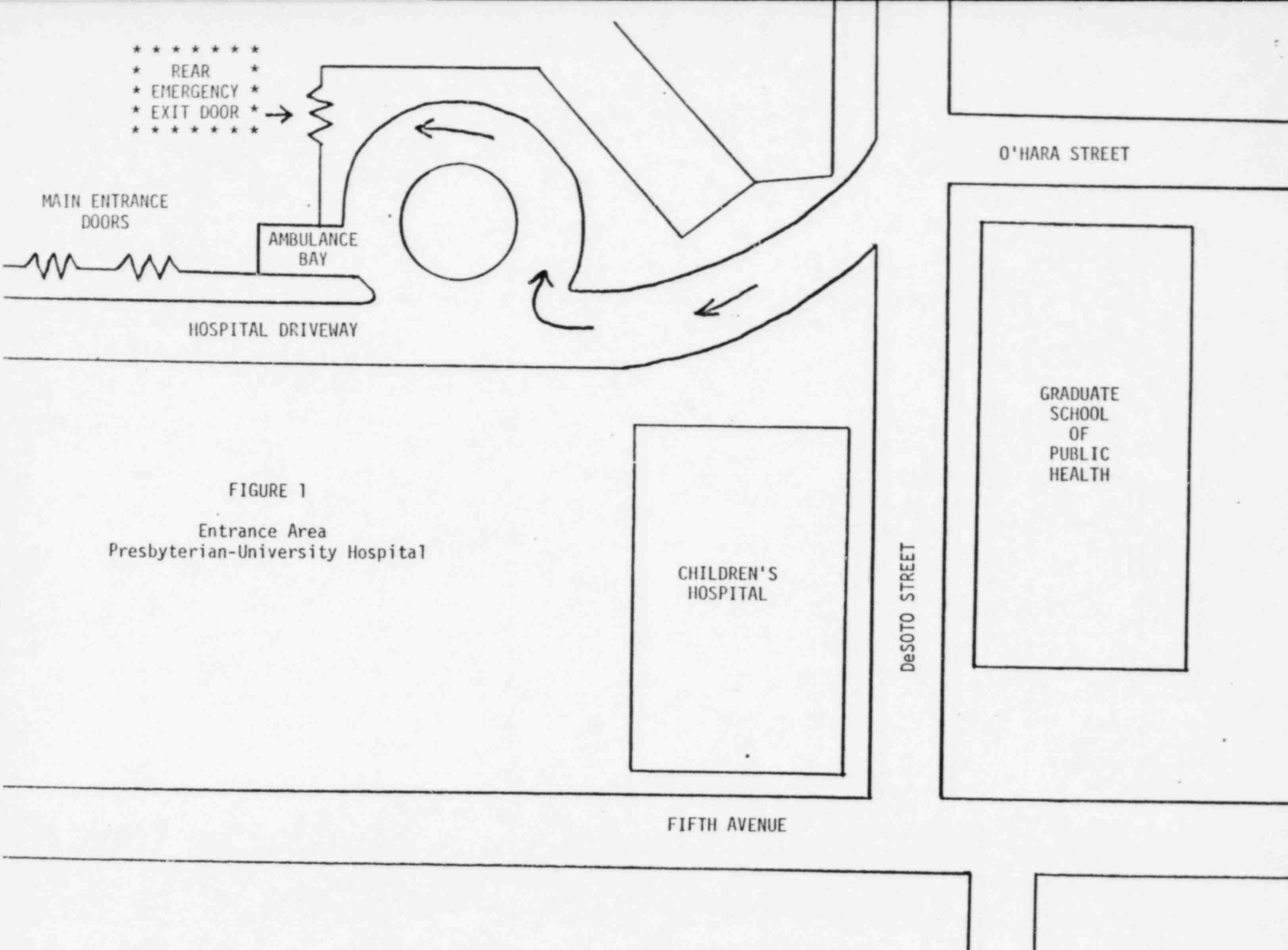

FIGURE 1

Entrance Area
Presbyterian-University Hospital

Reserved

Duquesne Light

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DERIVATION OF EPP/IP NUMERICAL VALUES

A. OBJECTIVE

In the Beaver Valley Power Station EPP/Implementing Procedures, ther are numerous numerical criteria specified. The basis of many of these criteria are not always obvious. The purpose of this annex, therefore, is to document derivation of the various numerical criteria. To minimize the size of this annex, wherever possible, reference is made to published methodologies or to documented calculational packages. Because of the summary nature of the derivations contained herein, the referenced methodologies/calculation packages should be reviewed before modifications are made to any numerical criterion.

Item	Proc.	Location		Numerical Value
1	I-1	Tab 1	UE para 2	1 E-7 μCi/cc 3 E-3 μCi/cc

Based on Appendix B, Table II Col 2, of 10 CFR 20

2	I-1	Tab 1	Alert para 1	12 x EPA limits

Based on criteria in Pennsylvania DER/BRP plan for nuclear incidents.

3	I-1	Tab 1	Alert para 2	100 times T/S

100 MPC for Kr-88 (most restrictive DCF) is 2 E7 pCi/m^3. The RG 1.109 DCF for submersion air dose is 1.52 E-2 mrad-m^3/pCi-yr. Assuming a release flow rate of 60000 ft^3/min (maximum flow via VS101) or 28.32 m^3/sec results in a release rate of 5.66 E8 pCi/sec. Assuming site boundary X/Q to be 5.3 E-5 sec/m^3, the site dose rate will be 456 mrad/yr or 0.052 mrad/hr.

For I-131, 100 times MPC is 1 E-8 μCi/cc. With flow rate and X/Q from above, the downwind activity would be 1.5 E-11 uCi/cc. The associated child thyroid dose (based on RG1.109 I-131 DCF and child inhalation of 1.76 E-4 m^3/sec during 8-hour accident) would be 0.04 mrem per hour of release.

A dose rate of 0.05 would be observable on GM-type survey instruments. An I-131 release rate less than 100 x T/S will not be observable in field samples analyzed in laboratory facility.

4	I-1	Tab 1	Alert para 2	Monitor EALs

Based on NUS Calculation 3082-04-003

5	I-1	Tab 1	Site para 1	20 mrem/hr; 170 mrem

Based on NCRP recommendations. See BVPS EPP 4.1.3

6	I-1	Tab 1	Site para 2	0.415 Ci/sec

Based on NUS Calculation 3082-04-001

7	I-1	Tab 1	General para 1	600 mrem;5 rem; 25 rem

Based on EPA PAGs. See BVPS EPP 4.1.4

8	I-1	Tab 1	General para 2	12.45 Ci/sec

Based on NUS Calculation 3082-04-001

Item	Proc.	Location		Numerical Value
9	I-1	Tab 2	Alert para 1	1000 x T/S
		Based on NUREG-0654		
10	I-1	Tab 3	All numerical values	
		Tab 4	All numerical values	
		Tab 5	UE numerical values	
		Tab 6	UE numerical values	
		Tab 8	UE numerical values	
		Tab 9	All numerical values	
		From BVPS Technical Specifications		
11	I-1	Tab 5	Alert para 1	50 gpm
		Tab 6	Alert/site numerical values	
		Tab 7	All numerical values	
		Tab 8	Alert para 1	300 µCi /gm
		From NUREG-0654		
12	I-1	Tab 12	Site para 1	5 psig
		Setpoint of Containment Hi-Hi alarm		
13	I-1	Tab 12	Site para 1	45 psig
		Design pressure of containment		
14	I-1	Tab 23	All numerical values	
		BVPS EOP E-10		
15	I-1	Tab 24	All numerical values	
		BVPS EOP E-11		
16	I-2	D.3.2		35 times MPC
		D.3.3		
		Attach 2	para 3.2	
		Attach 2	para 3.3	
	I-3	D.3.2		

The NRC MPCs are based on 500 mrem/yr. 12 times EPA MPCs would be 48, or a ratio of about 10. The dilution in the river applicable to the EPA numbers, but not the NRC numbers, that occurs between the plant discharge and the water plant suction is 15000 gpm/4.9 E-6 gpm (lowest river ebb) or 330. Thus, the activity in the discharge would have to increase by 330/10 or about 35 before EPA MPCs could be exceeded.

Item	Proc.	Location		Numerical Value
17	I-3	D.2.6		20 mrem/hr; 170 mrem

Based on NCRP recommendations. See BVPS EPP 4.1.3

Item	Proc.	Location		Numerical Value
18	I-3	D.3.3	note	170 mrem

RG1.109 provides a DCF for ingestion dose to the adult GI-LLI of 1.51 E-5 mrem/pCi for Co-60. (most restrictive corrosion product. Fission products not considered, as significant fission products could result only from fuel damage—which would be identified by other EALs.) Dividing the 170 mrem by this DCF yields an uptake of 11.26 μCi. Assuming 1100 cc ingestion in an entire day (this is conservative, as Midland water is batch processed. Contaminated water would not be immediately introduced into the distribution system) this yields a water supply activity of 1 E-2 μCi/cc (no credit for treatment plant filtration). At the lowest ebb, the dilution factor in the Ohio river is about 300. Thus, the plant discharge would have to be 3 μCi/cc. This is several orders of magnitude higher than normal primary coolant. Since the maximum dilution available via the liquid waste system is 0.000667, it is unlikely that radioactive liquids of this concentration would be placed in tanks ready for discharge (tank activity 4.5 E3 μCi/cc for discharge of 3 μCi/cc).

Even if such a release was to occur, it would be unlikely to continue long enough to allow drinking water to be sufficiently contaminated enough to yield 170 mrem—the criteria for site emergency.

Item	Proc.	Location		Numerical Value
19	I-3	Attach 1	Para 2.6	20 mrem/hr;170 mrem

Based on NCRP recommendations. See BVPS EPP 4.1.3

Item	Proc.	Location		Numerical Value
20	I-3	Attach 2	Para 3.2;6	35 MPC

See item 16

Item	Proc.	Location		Numerical Value
21	I-4	D.1.11		>5 mrem/hr,100 mrem >1 MPC, 40 MPC-hours/wk

5 mrem/hr, 100 mrem constitutes a radiation area. MPC limits from 10 CFR 20.

22 deleted

Item	Proc.	Location	Numerical Value
23	I-4	D.1.12.1	>100 mrem
		Arbitrarily chosen value. Represents a 2% change relevent to the EPA PAG of 5 rem.	
24	I-4	D.2.6	cc; 40 MPC hours
		See item 21	
25	I-4	D.2.7	600 mrem;5 rem;25 rem
		See BVPS EPP 4.1.4	
26	I-4	D.3.0	<170 mrem
		See item 18	
27	I-5	D.1.12	>5 mrem/hr,>100 mrem >1 MPC, 40 MPC-hours/wk
		See items 21, 22	
28	I-5	D.1.18	40 MPC hours
		See item 21	
29	I-5	D.1.19.1	>100 mrem/hr
		See item 23	
30	2.1	D2.1	100 T/S
		See item 3	
31	2.1	D2.4	40 MPC hours
		See item 21	
32	2.1	D3.5	100 cpm > background

For a count rate instument the S.D is equivalent to:

$$\sigma = \sqrt{\frac{CB}{2 \times RC}}$$

Where σ = the standard deviation; CB=background count rate; and RC=time constant of instrument. For a minimum detectable counts to a 95% confidence level, result is multiplied by 1.96.

Item	Proc.	Location	Numerical Value

Eberline reports that on all of their count rate instruments, the time constant is equivalent to the stated response time (to 90%) divided by 2.2. Thus, for the E140 which has a variable response time of 2 - 10 sec, the time constant is 0.91 sec to 4.55 sec or about 0.0015 to 0.076 min.

If we substitute a background count rate of 300 cpm into the expression, and use the slow response, a minimum detectable count rate of 87.1 cpm will be obtained. This is rounded to 100 cpm for simplicity.

33	2.1	D3.5	Sensitivity data

Using the expression stated in item 32, the MDC for a background count rate of 2000 cpm is 224.83 cpm. The minimum sensitivity can be calculated using the following:

$$\frac{\text{MDC} \times 4.5\text{ E-7}}{(\text{coll. eff.})(\text{det. eff.})(\text{vol})} = \text{activity}$$

The input data is a collection efficiency of 0.91 for AgZ; a detection efficiency (empirically determined at BVPS) of 0.0268 with AgZ cartridge and E140/HP210; and a volume of 10 ft^3 (or 2.83 E5 cc).

$$\frac{(224.83)(4.5\text{ E-7})}{(0.91)(0.0268)(2.83\text{ E5})} = 1.466\text{ E-8 }\mu\text{Ci/cc}$$

34	2.1	D4.2	2 mph; 4.9 E6

Based on river data from Army Corps of Engineers

35	2.1	D5.3	50 mrem isodose

Based on 10% of population annual dose limit (10 CFR 20)

36	2.1	E1	100 T/S

See item 3

37	2.1	Attach 6 Reverse	graph

Item 33 provides the general formula, if the term "MDC" is replaced with the net activity, the expression can be re-written as cpm x 6.52 E-11 = µCi/cc.

For the particulate filter, the collection efficiency was taken as 0.9. The detection efficiency was empirically determined to be 0.0912. Placing these parameters in the item 33 expression yields a dose conversion formula of: cpm x 1.94 E-11 = µCi/cc.

Item	Proc.	Location	Numerical Value
		For the charcoal filter, the conversion formula was taken from the BVPS EPP Issue 5.	
		The MDA graph on the lower right hand corner was based on the formula in item 32.	
38	2.1	Attach 7	graph
		Graph reproduced from the original EPA document.	
39	2.2	D6	100 mrem/hr
		See item 21	
40	2.2	D7.3.7	MDA table
		Based on general formula stated in item 32	
41	2.2	D7.3.9	>100 cpm
		See item 32	
42	2.2	D10	30 min;100 mrem
		Arbitrarily chosen as reasonable time and dose.	
43	2.3	D6	100 mrem
		See item 21	
44	2.3	D7.1	1.0 mrem/hr
		Arbitrarily chosen. Dose rate will be greater than background flucuations, but less than that requiring offsite actions.	
45	2.3	D7.3.7	MDA table
		See item 40	
46	2.3 2.4 2.5	D10 30 min; 100 mrem C1 C1	
		Arbitrarily chosen as reasonable time and dose.	
47	2.6	Entire Procedure	
		See Appendix 1 to this annex.	

Item	Proc.	Location	Numerical Value
48	2.7	D1.10	35 MPC
		See item 16	
49	2.7	D2.2.2	Flow data
		Taken from BVPS EPP Issue 5 IIB-10	
50	2.7	D2.6	12 x MPC
		See item 2	
51	2.7	Attach. 1	Column e values
		Taken from 10 CFR 20 Appendix B Table II Column 2	
52	2.7	Attach. 2	Column e values
		Taken from EPA 570/9-76-003, National Interim Primary Drinking Water Regulations, Appendix B, Table IV-2A. Values in this table are in pCi/l. Multiplying pCi/l by 10^{-9} yields µCi/cc. Values for nuclides not provided in Table IV-2A were calculated as described in Appendix IV.A of that document.	
53	3.1	D1.1.2	>10 MPC
		This administrative control value is based on 10 CFR 20.103.A.3, which requires uptake assessment if the exposure exceeds 2 MPC-hrs a day or 10 MPC-hrs per week.	
54	3.1	D1.1.3	>1 MPC
		See item 53. Lower value is based on an arbitrarily chosen dilution factor of 10. (Air from uncontaminated areas diluting flow past building ventilation monitor.)	
55	3.1	D1.2.3	>5 rem; >25 rem
		Based on EPA PAG for members of the general public during an emergency.	
56	3.1	D1.4.1 E1.10, E2.11	>5 mrem/hr, 100 mrem >1 MPC, 40 MPC-hours
		See item 21, 22	
57	3.1	Attach. 1	Numerical values
		Explained in notes in Attachment 1 of that procedure.	

Item	Proc.	Location	Numerical Value
58	3.3	D2.2.3	1800 pCi/100 cm^2
		This contamination level is 4 times the normal contamination control limit of 450 pCi/100 cm^2. The increase factor was arbitrarily chosen, but the increase in contamination will not result in a significant increase in whole body or skin exposure, but will facilitate evacuations.	
59	3.4	C3 D2.2.1 D2.2.2	40 MPC-hrs
		10 CFR 20.103	
60	3.4	D3.2.1	9 E-5 μCi/cc
		Based on NUREG-0041 stated protection factor of 10,000 for SCBA in pressure demand mode.	
61	3.4	D3.4	10 MPC;70 nCi
		The 10 MPC level is based on 10 CFR 20.103.A.3 The 70 nCi is 10% of the maximum permissible body burden (MPBB) for I-131. 10% was arbitrarily chosen as a reasonable screening level.	
62	3.4	D4.2.2	50 PF
		This PF is based on the limitations of the respirator which, in accordance with NUREG-0041, establishes a PF of 50. The assignment of a PF for the iodine sorbant cannister is based on the discussion contained in EPP/IP 3.4	
63	3.4	D4.2.3	100 x MPC
		Arbitrarily chosen value to limit exposure should respirator fail.	
64	3.4	D4.2.4	20 MPC-hrs
		Arbitrarily chosen value to provide for additional exposure on subsequent days.	
65	3.4	D4.2.7	10 MPC
		10 CFR 20.103.A.3	
66	3.4	D4.2.7	70 nCi
		See item 61	

Item	Proc.	Location	Numerical Value
67	4.1	D1.1	170 mrem
		See BVPS EPP Section 4.1.3	
68	4.1	D1.2, D1.3.1	1 rem;25 rem
		Based on EPA PAGs.	
69	4.1	D2.2	Contamination values

RG1.109 provides a dose conversion factor of 1.7 E-8 mrem-m²/hr-pCi for Co-60. Dividing this DCF into the stated dose, 62 mrem, will yield the associated contamination level.

$$\left(\frac{62\ \text{mrem}}{\text{hr}}\right)\left(\frac{\text{hr-pCi}}{1.7\ \text{E-8 mrem-m}^2}\right)\left(\frac{\text{m}^2}{10000\ \text{cm}^2}\right)\left(\frac{100\ \text{cm}^2}{100\ \text{cm}^2}\right) = 3.6\ \text{E7 pCi/100 cm}^2$$

Item	Proc.	Location	Numerical Value
70	5.2	E3.1 E3.2	10/60/150 rem 25/150/375 rem

Based on Section C.9, C.10 of ICRP 28, The Principles on General Procedures for Handling Emergency and Accidental Exposure of Workers. Normal limits found in 10 CFR 20.101

Item	Proc.	Location	Numerical Value
71	5.3	D3 Table of Emergency Exposure Limits	
		From NCRP Report 39, Basic Radiation Protection Criteria	
72	5.3	D3.4.3 D3.4.4	10/60/150 rem 25/150/375 rem
		See item 70	
73	5.4	D2.1	312 mrem
		10 CFR 20.202.A.1	
74	5.4	D2.2	2 mrem/hr;100 mrem/wk
		10 CFR 20.105.b	
75	5.4	D4.3.1	70 nCi
		See item 61	

Item	Proc.	Location	Numerical Value
76	5.4	D4.2.3	10,40,120

These control levels represent approximately 25% of the applicable 10 CFR 20 limits.

100 dpm in a nasal smear is low enough to indicate a possible uptake, but above MDA for the counters used to analyze the smear.

Item	Proc.	Location	Numerical Value
77	5.4	D4.2.4	5% MPBB

RG8.26 recommends dose commitment evaluation at 10% MPBB. Establishing 5% MPBB as the investigation level adds conservatism.

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DERIVATION OF DOSE PROJECTION METHODOLOGY

1. GENERAL

1.1 Purpose

This appendix provides a general derivation of the dose projection methodology presented in EPP/IP 2.6 "Dose Projection". Where formal calculational packages exist or where published derivations were used, reference is made to these documents in lieu of repeating technical information.

1.2. Assumptions

The overriding assumption in all of the methods provided in this procedure is that the results will be conservative, that the results will be used with due regard to their approximate nature, and that more definitative data and methods, such as that based on field monitoring, environmental or process sampling will be utilized when such data are available.

Numerous assumptions are made in the individual calculational packages. These assumptions will be discussed in the individual derivations.

2. TAB 1 — X/Q BY METEOROLOGICAL MONITORING SYSTEM

2.1 Discussion

The methodology in this Tab is based on the content of the NUS Corporation report 1539 Volume 1, Revision 3 of August 1979, "DLC Meteorological Monitoring System". No calculations were performed for this Tab.

3. TAB 2 — GROUND LEVEL RELEASE BY TABLE

3.1 Discussion

3.1.1 The X/Q versus wind speed and distance tables contained in Tab 2 were developed by NUS-NESD using a computer code based on the formulae and criteria of Regulatory Guide 1.145, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants". Section 1.3.1 of the regulatory guide provides the formulae used in determining the centerline, ground level, relative concentrations from a ground level release.

3.1.2 Values of sigma-y and sigma-z used in the formulae of section 1.3.1 of the regulatory guide were found using the parameters and formulae provided on page 16 and Table 5.4 of NUREG/CR-0523, "MESODIF-II: A Variable Trajectory Plume Segment Model to Assess Ground-Level Concentrations and Deposition of Effluent Releases for Nuclear Power Facilities".

3.1.3 The values for the delta-T parameter tabulated in Step B were developed from the values provided in Table 2 of Safety Guide 1.23, "Onsite Meteorological Programs". The safety guide values are in terms of $^{\circ}$C/100 m. Unit conversions are utilized to obtain the delta-T values in units of $^{\circ}$F/115 ft.

$$\Delta T_{(^{o}F/115\ ft)} = .631\ \Delta T_{(^{o}C/100\ m)}$$

4. TAB 2 — ELEVATED RELEASE X/Q BY TABLE

4.1 Discussion

4.1.1 The X/Q versus wind speed and distance tables contained in Tab 2 were developed by NUS-NESD using a computer code based on the formulae and criteria of Regulatory Guide 1.145, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants". Section 1.3.2 of the regulatory guide provides the formula used in determining the centerline, ground level relative concentrations from an elevated release. The input data is tabulated in paragraph 4.2 below.

4.1.2 An important assumption in the calculation of the X/Q values for elevated releases was that at each of the downwind distances, the X/Q value selected was the maximum value at or beyond that distance. This is in accordance with Regulatory Guide 1.145. Due to terrain effects, the maximum value occurs within a 2 mile radius of the plant.

4.1.3 Values of sigma-y and sigma-z used in the formula contained in section 1.3.2 of the regulatory guide were determined as described in paragraph 3.1.2 above.

4.1.4 The values for the delta-T parameter tabulated in step B were developed as described in paragraph 3.1.3 above, using:

$$\Delta T_{(^{o}F/465\ ft)} = 2.55\ \Delta T_{(^{o}C/100\ m)}$$

4.2 Input Data

4.2.1 The terrain heights utilized in the calculation of the X/Q values were as follows:

	Direction	Terrain
Exclusion Area Boundary (EAB) (610 m)	0-59	High
	60-349	Low
	350-360	High
Greater Than EAB to less than 2.0 miles	0-79	High
	80-144	Low
	145-189	High
	190-239	Low
	240-360	High
Greater than 2 miles	All Directions	High

5. TAB 3 -- X/Q BY OVERLAY METHOD

5.1 Discussion

5.1.1 This procedure is based on the previous EPP Issue 5 procedure II B-7. Only editorial reformatting was performed.

5.1.2 The values for the delta-T parameter tabulated in step 2 were developed as described in paragraph 4.1.4 above.

6. TAB 4 — ALTERNATE METEOROLOGY

6.1 Discussion

6.1.1 The stability class table in step D.1.2 of the Tab was reproduced from Table A.1 in Appendix A.3 of TID-24190, "Meteorology and Atomic Energy", D.H. Slade for USAEC.

6.1.2 The wind speed table was derived from miscellaneous sources.

7. TAB 5 -- SUPPLEMENTARY METEOROLOGICAL PARAMETERS

7.1 Discussion

7.1.1 Plume width is calculated by the expression below. This expression was taken from section 3-3.5.6 of "Meteorology and Atomic Energy", TID 24190:

$$Y = 2\sigma_y \ln\left(\frac{100}{P}\right)^{.5}$$

Where Y = the distance where the concentration (and thus dose) has dropped to P% of its value on the plume centerline. As P is taken to be 10%, the expression reduces to: $2.15\sigma_y$.

7.1.2 The plume height is calculated by the expression: $Z = 2.15\sigma_z$. This expression was derived from section 3-3.5.6 of TID 24190.

7.1.3 Values of sigma-y and sigma-z were calculated using the algorithm provided on page 16 and Table 5.4 of NUREG/CR-0523, Mesodif-II.

7.1.4 Transit time was calculated using the expression:

$$\text{Transit Time} = \frac{\text{Downwind Distance}}{\text{Actual Wind Speed}}$$

7.2 Reference

7.2.1 NUS Calculation 3082-12-001

8. TAB 6 -- DOSE PROJECTION BY HAND CALCULATION BASED ON FSAR ACCIDENT

8.1 Discussion

8.1.1 The source terms (Q)(ie: releases) were developed for each accident based on the information in the Beaver Valley FSAR. Where FSAR information was incomplete, source terms were generated using other documents. Based on these releases, whole body and thyroid dose factors (DF) were generated for each type of accident. Multiplying this dose factor by the X/Q value yields dose.

8.2 Input Data

8.2.1 Volume Control Tank Rupture

The activity released in this accident is assumed to be the fission product inventory in the vapor phase of the VCT (Table 14B-9 of the FSAR, shown herein as Table 1), and the noble gases dissolved in the reactor coolant contained in the VCT. The release of noble gases in the reactor coolant is calculated by:

Release = VCT Volume x RCS Concentration x unit conversions

The reactor coolant concentrations are given in Table 3 (FSAR 14B-6). The total release is the sum of the noble gases and the fission product gases. The resulting source term is presented in Table 4. Iodine releases are negligible for this accident.

8.2.2 Gas Surge Tank Rupture

The activity contents of the tank are provided in Table 5 (FSAR 14B-10). The accident analysis assumes the contents of the tank are released. Iodine releases are negligible for this accident.

8.2.3 Steam Generator Tube Rupture

For steam generator tube rupture accidents with concurrent loss of offsite power, activity is released to the atmosphere via the atmospheric dumps, and if necessary the steam safeties. The releases to the secondary side are given on page 14.2-13 of the FSAR. The FSAR assumes that only 1% of the radioiodine in the steam generator is eventually released to the atmosphere. All noble gases are released. Table 6 lists the releases to the environment.

8.2.4 Main Steam Line Break Accident

Releases for this accident are not provided in the BVPS FSAR, thus, NUREG/CR-0036 was used to generate release data. NUREG/CR-0036 provides the activity release for a main steam line break utilizing a specified set of assumptions. The releases were modified to reflect significant differences between the BVPS facility and the facility upon which the NUREG/CR-0036 analysis was performed. Table 7 tabulates the changes made to the assumptions, and Table 8 tabulates the resulting activity releases for BVPS.

8.2.5 Fuel Handling Accident

The releases for this accident were provided in the FSAR. However, the releases specified were inconsistent with the resulting postulated doses and the accident scenario described in the FSAR. Releases were generated based on the postulated dose and the accident scenario. Table 9 tabulates the activity releases.

8.2.6 Loss of Coolant Accident

100% of the noble gas activity in the gap is assumed to be released to the containment and is available for release to the environment via containment leakage pathways. The noble gas activity, Q_i, is given by:

$$Q_i = \frac{LA_{oi}}{\lambda + L}\left[1 - e^{-(\lambda + L)t}\right]$$

where: L is containment leakage; t is time after accident, λ is the radiological decay constant for radionuclide,i; A_{oi} is the initial activity of noble gas radionuclide, i, in the containment. Table 10 tabulates the noble gas releases for a LOCA.

For radioiodines, 25% of the core halogens are assumed to be in the containment atmosphere and available for release. Of the radioiodine available for release, 10% is assumed to be in the non-reactive form, while in remainer is assumed to be inorganic. Half of the containment leakage is assumed to be unfiltered, the remainder is filtered by a 95% efficient iodine filter. The most conservative case of sprays (Case III) was used. The activity released to the environment is calculated by:

$$Q_i = \frac{0.525\ LA_{oi}}{\lambda + .9\lambda_{sp} + L}\left[1 - e^{-(\lambda + .9\lambda_{sp} + L)t}\right]$$

Where λ_{sp} is the removal factor for iodine sprays; .525 is unit conversions and 95% iodine filtration efficiency and 50% filtration factors. Table 11 tabulates the radioiodine releases for the LOCA.

8.2.7 Waste Gas Decay Tank Rupture

For the purpose of the FSAR and this Tab, the activity of the waste gas surge tank and the waste gas decay tank are taken to be the same.

8.2.8 Breathing Rate

The breathing rate for each age group (BR_a) were developed from the annual breathing rate provided in Regulatory Guide 1.109 Rev.1. This breathing rate was converted to a daily rate and half of this daily rate was then assumed to occur over an eight hour period. The eight hour breathing rate was then converted to a breathing rate per second for use in the calculations. Table 12 documents this calculation.

8.2.9 Dose Conversion factors

The dose conversion factors (DCF) for exposure to a semi-infinite cloud of radioactive noble gas were taken from Regulatory Guide 1.109, Table B1. The dose conversion factors for inhalation of radioiodine by the various age groups were taken from Regulatory Guide 1.109 Tables E7 to E10.

8.3 Formulae

8.3.1 Noble Gas

$$\text{Dose (rem)} = 3.17\text{ E+1 } (X/Q)\sum_i DCF_i\, Q_i$$

$$\text{Dose factor} = 3.17\text{ E+1}\sum_i DCF_i\, Q_i$$

8.3.2 Radioiodine

$$\text{Dose (rem)} = 1\text{ E9 } (X/Q)\, BR_a \sum (DCF_{ai})\, Q_i$$

$$\text{Dose factor}_a = 1\text{ E9 } BR_a \sum_i (DCF_{ai})\, Q_i$$

Where:

DCF_i	=	Dose conversion factor, mrem-m^3/pCi-yr
X/Q	=	Atmospheric dispersion, sec/m^3
Q_i	=	Release, Ci
3.17 E1	=	Unit conversion (yr-rem-pCi)/(sec-mrem-Ci)
BR_a	=	Breathing Rate, m^3/sec
DCF_{ai}	=	Dose conversion factor, mrem/pCi
1 E9	=	Unit conversion, (rem-pCi)/(mrem-Ci)

In lieu of providing dose factors for each age group, the resulting dose factors for the age groups, for each accident, were ratioed to obtain a set of thyroid dose age group ratios by which the calculated child thyroid dose could be converted to the thyroid dose for the age group of interest.

Table 13 tabulates the resulting dose factors.

9. TAB 7 — DOSE PROJECTION BASED ON MONITOR READING

9.1 Discussion

The graphs included in this tab were based on conversion factors developed as explained in this section. Two separate conversion factors were utilized. The derivation of these factors is explained in detail in NUS Calculation 3082-12-005, which is summarized below.

The basic formula for dose rate can be expressed as:

$$DR = (0.1141)(X/Q)(Q_t)\sum_i S_i \, DCF_i$$

Where DR = Dose rate downwind, rem/hr

Q_t = Total activity release rate, Ci/sec

S_i = Ratio of radionuclide, i, activity release rate to the total activity release rate

0.1141 = Unit conversion, (rem-μCi-yr)/(mrem-Ci-hr)

The activity release from a monitored pathway can be shown to be:

$$Q_t = (4.7195\text{ E-4})\frac{(CR_t)(\text{flow})}{\sum_i S_i e_i}$$

Where: CR_t = Monitor indication, cpm

flow = flow rate thru monitor, cfm

e_i = Monitor efficiency, cpm-cc/μCi

4.7195 E-4 = Unit conversions, (cc-Ci)/(cfm-sec-μCi)

These two expressions form the basis of the derivation. (For thyroid dose, the breathing rate is incorporated.)

9.2 Input Data

9.2.1 Monitor Efficiency

Table 14 (BVPS ODCM Table 2.1-2) presents the monitor efficiencies. There is no efficiency provided for radioiodines. It was assumed that for any accident the radioiodines would be in proportion to the noble gases. The calculation incorporates a correction for the observed noble gas to iodine ratio in the source term in the dose factor for the thyroid dose. (Thus, the total release rate is used with the thyroid dose factor to obtain the thyroid dose.)

For the SA9/SA10 monitors, the efficiencies are documented in NUS calculation 3082-12-005.

9.2.2 Dose Conversion Factors

The dose conversion factors (DCF) were derived as described in section 8.2.9 of this annex.

9.2.3 Release Source Term

The release source term was derived as described in section 8.2 of this annex.

9.3 Results

The result of these calculations were plotted on graphs incorporated into the Tab.

10. TAB 8 -- DOSE PROJECTION BY HAND CALCULATION-KNOWN ISOTOPIC RELEASE RATE

10.1 Discussion

In this Tab, the actual release concentration and release flow rate are known, as a result of sampling. The activity released to the environment is given by:

$$Q_i = 1\ E\text{-}6\ (F)(C_i)(t)$$

Where C_i is the concentration of radionuclide, i, to be released (or being released), μCi/cc; F is the release flow rate, cc/hr; and t is the release period, hr. The release term, Q_i can be converted to dose using the expression in either paragraph 8.3.1 and/or 8.3.2 above. These expression can be reduced to simplest terms by combining to obtain a dose factor:

10.1.1 Whole Body Dose

$$\text{Dose factor}_i\ (\text{rem-m}^3/\text{sec-}\mu\text{Ci}) = (3.17\ E\text{-}5)(DCF)_i$$

$$\text{Dose} = (X/Q)(F)(t)\sum_i (\text{dose factor}_i)(C_i)$$

10.1.2 Thyroid Dose

The dose factor for radionuclide, i, and age group, a is:

$$\text{Dose Factor}_{ai}\ (\text{rem-m}^3/\text{sec-}\mu\text{Ci}) = (1\ E3)(BR_a)(DCF_{ai})$$

The thyroid dose for age group, a is:

$$\text{Dose} = (X/Q)(F)(t)(RF)\sum_i (\text{Dose Factor}_{ai})(C_i)$$

Where:
F = Release rate, cc/hr

C_i = Release concentration, μCi/cc

1 E-6 = Unit conversions, μCi/Ci

3.17 E-5 = Unit conversions, (rem-pCi-yr)/(mrem-μCi-sec)

RF = Release fraction, unitless

1 E3 = Unit conversions, rem-pCi/mrem-μCi

10.2 Input Data

The dose conversion factors (DCF) were derived as described in section 8.2.9 of this annex.

The breathing rate values were obtained as described in section 8.2.8 of this appendix.

10.3 Results

Table 15 tabulates the derivation of the dose factors.

11. TAB 9 — DOSE PROJECTION BY HAND CALCULATION-KNOWN ISOTOPIC INVENTORY

11.1 Discussion

In this Tab, the actual release quantity are known, as a result of sampling. The whole body and thyroid doses are found using the expressions below:

11.1.1 Whole Body Dose

$$\text{Dose Factor}_i \ (\text{rem-m}^3/\text{sec-Ci}) = (3.17\ \text{E1})(\text{DCF})_i$$

$$\text{Dose} = (X/Q)\sum_i(\text{dose factor}_i)(Q_i)$$

11.1.2 Thyroid Dose

$$\text{Dose Factor}_{ai} \ (\text{rem-m}^3/\text{sec-Ci}) = (1\ \text{E9})(\text{BR}_a)(\text{DCF}_{ai})$$

$$\text{Dose} = (X/Q)\sum_i(\text{dose factor}_{ai})(Q_i)$$

Where: 3.17 E1 = Unit conversion, (rem-pCi-yr)/(mrem-Ci-sec)

1 E9 = Unit conversion, rem-pCi/mrem-Ci

11.2 Input Data

The dose conversion factors (DCF) for exposure to a semi-infinite cloud of radioactive noble gas were taken from Regulatory Guide 1.109, Table B1. The dose conversion factors for inhalation of radioiodine by the various age groups were taken from Regulatory Guide 1.109 Tables E7 to E10.

The breathing rate values were obtained as described in section 8.2.8 of this appendix.

11.3 Results

Table 16 tabulates the input and output data for this derivation.

12. TAB 10 -- DOSE PROJECTION BASED ON FIELD MEASUREMENTS

12.1 Discussion

The method in this Tab is based on the fact that the external whole body dose (DR, in rad/sec) from submersion in a semi-infinite cloud of a radioactive gas (i) with an effective photon energy of E_γ(MeV/d) and an activity of X (Ci/m^3) can be found by the relationship:

$$DR = 0.25\,\bar{E}_\gamma X$$

This expression can be re-arranged to obtain release rate:

$$X = \frac{DR}{0.25\,E_\gamma}$$

The $\bar{E}_\gamma$ values were determined using the FSAR accident analysis source terms as described in section 8 of this appendix, determining the ratio of the particular nuclides to the release mix as a whole, multiplying this ratio by the energy per disintegration of the nuclides, and summing these products to determine the energy per disintegration for each particular accident.

13. TAB 11 — DOSE ASSESSMENT BASED ON ENVIRONMENTAL MEASUREMENTS AND SAMPLES

13.1 Discussion

13.1.1 Part 1

- Discussion

  The formulae of part 1 of Tab 11 are generally based on the formula provided in paragraph C.1.1 of that Tab. The formulae in paragraphs 1.2, 1.3, and 1.4, are based on paragraph 1.1 with the incorporation of the variables known for that particular instrument/sample configuration. The input data was determined empirically at the BVPS.

13.1.2 Part 2

- Discussion

  The dose conversion factors identified in this section were taken from RG 1.109.

13.1.3 Part 3

- Discussion

  The methodology and the various numerical constants used in this part were taken from RG 1.109.

13.1.4 Part 4

- Discussion

The numerical constants used in this part were derived from the data provided in 21 CFR 1090.4. This regulatory document, issued by the FDA, was based on "Supporting Documentation for Proposed Response Recommendations In Case of the Accidental Radiation Contamination of Food and Animal Feeds", by B. Shleien, etal.

The data provided in that document was in the form of a series of values for each sample media/intake that would yield the specified thyroid dose commitment. These values were ratioed to develop the table included in part 4.

13.1.5 Part 5

- Discussion

This Tab estimates whole body and skin dose rate (if desired) from standing on contaminated ground. The methodology was taken from Regulatory Guide 1.109, "Calculation of Annual Doses to Man From Routine Releases of Reactor Effluents...."

The dose conversion factors, in mrem/hr per pCi/m ^{2} of activity were taken from Table E6, Regulatory Guide 1.109. The Table E6 values were multiplied by the conversion 100-100 cm ^{2}/m ^{2} to obtain dose conversion factors in terms of mrem/hr per pCi/100 cm ^{2}.

The single conversion factors for gross activity conversion were chosen as those specified for I-132. From review of WASH-1400 and other release data, I-132 was the most restrictive of the significantly released radionuclides.

13.1.6 Part 6

- Discussion

The estimate of activity deposition from a passing plume is based on methodology described in TID24190, "Atomic Energy and Meteorology", page 333. This document provides, in expression 7.28, that the activity deposited can be shown to be:

$$C = (X/Q)(Q)(t)(d)\int_t \exp(-\lambda t)dt$$

Assuming no decay between release and deposition, and incorporating appropriate unit conversions:

$$C = (6\ E11)(X/Q)(Q)(d)(t)$$

Where: C = Deposition activity, pCi/100 cm ^{2}

d = Deposition rate, m/sec

t = Release time, min

6 E11 = Unit conversion, (sec-pCi-m ^{2})(min-Ci-100 cm ^{2})

The deposition rate of particulates in a plume was taken from Table VI.B-1, WASH-1400.

14. TAB 12 — INTEGRATED DOSE ASSESSMENT

12.1 Discussion

This Tab is administrative in nature and contains no numerical constants or formulae.

BVPS FSAR

TABLE 1

TABLE 14B-9

VOLUME CONTROL TANK ACTIVITIES

Isotope	Activity (Curies)
Kr-83m	1.41
Kr-85m	6.35
Kr-85	6.05×10^3
Kr-87	3.96
Kr-88	1.06×10^1
Xe-131m	1.39
Xe-133m	1.05×10^1
Xe-133	3.85×10^2
Xe-135m	3.59
Xe-135	1.08×10^1
I-131	Negligible
I-132	Negligible
I-133	Negligible
I-134	Negligible
I-135	Negligible

TABLE 14B-5

PARAMETERS USED IN THE CALCULATION OF REACTOR COOLANT ACTIVITIES

1.	Core thermal power, maximum calculated, MWt	2,766
2.	Fraction of fuel containing clad defects	0.01
3.	Reactor coolant liquid volume, including pressurizer, ft^3	9,387
4.	Reactor coolant average temperature, F	577
5.	Purification flow rate (normal), gpm	60
6.	Effective cation demineralizer flow, gpm	6.0
7.	Volume control tank volumes	
	a. Vapor, ft^3	180
	b. Liquid, ft^3	120
8.	Fission product escape rate coefficients:	
	a. Noble gas isotopes, sec^{-1}	6.5×10^{-8}
	b. Br, I and Cs isotopes, sec^{-1}	1.3×10^{-8}
	c. Te isotopes, sec^{-1}	1.0×10^{-9}
	d. Mo isotopes, sec^{-1}	2.0×10^{-9}
	e. Sr and Ba isotopes, sec^{-1}	1.0×10^{-11}
	f. Y, La, Ce, Pr isotopes, sec^{-1}	1.6×10^{-12}
9.	Mixed bed demineralizer decontamination factors:	
	a. Noble gases and Cs-134, 136, 137, Y-90, 91 and Mo-99	1.0
	b. All other isotopes	10.0
10.	Cation bed demineralizer decontamination factor for Cs-134, 136, 137, Y-90, 91 and Mo-99	10.0

TABLE 14B-6

REACTOR COOLANT EQUILIBRIUM FISSION AND CORROSION PRODUCT ACTIVITIES
(Based on Parameters Given in Table 14B-5)

Isotope	Activity (uCi/cc)	Isotope	Activity (uCi/cc)
Br-84	2.9×10^{-2}	Cs-137	0.31
Rb-88	2.3	Cs-138	0.66
Rb-89	6.9×10^{-2}	Ba-140	3.0×10^{-3}
Sr-89	2.9×10^{-3}	La-140	1.1×10^{-3}
Sr-90	6.9×10^{-5}	Ce-144	2.5×10^{-4}
Sr-91	1.4×10^{-3}	Pr-144	2.5×10^{-4}
Sr-92	5.2×10^{-4}	Kr-85	7.8
Y-90	8.4×10^{-5}	Kr-85m	1.4
Y-91	4.7×10^{-4}	Kr-87	0.86
Y-92	5.1×10^{-4}	Kr-88	2.3
Zr-95	4.9×10^{-4}	Xe-133	19.2
Nb-95	4.9×10^{-4}	Xe-133m	2.2
Mo-99	2.3	Xe-135	2.3
I-131	1.8	Xe-135m	0.78
I-132	0.63	Xe-138	0.48
I-133	2.9	Mn-54	5.6×10^{-4}
I-134	0.39	Mn-56	2.1×10^{-2}
I-135	1.5	Co-58	1.8×10^{-2}
Te-132	0.19	Co-60	5.4×10^{-4}
Te-134	2.14×10^{-2}	Fe-59	7.5×10^{-4}
		Cr-51	6.8×10^{-4}

TABLE 4

Radionuclide	Activity Vapor phase (Ci)	Primary Coolant Conc (μCi/cc)	Q_i (Ci)
Kr-83m	1.41	-	1.41
Kr-85m	6.35	1.4	1.11(1)
Kr-85	6.05(3)*	7.8	6.08(3)
Kr-87	3.96	0.86	6.88
Kr-88	1.06(1)	2.3	1.84(1)
Xe-131m	1.39	-	1.39
Xe-133m	1.05(1)	2.2	1.80(1)
Xe-133	3.85(2)	1.92(1)	4.50(2)
Xe-135m	3.59	0.78	6.24
Xe-135	1.08(1)	2.3	1.86(1)
Xe-138	-	0.48	1.63

* 6.05(3) = 6.05×10^3

TABLE 14B-10

GAS SURGE TANK ACTIVITY

Assumptions: Tank at operating pressure - 80 psia

Clad defects in 1 percent of fuel rods

Operation at 2,766 MWt

Tank contains worst gaseous activity inventory associated with gas stripping of reactor coolant letdown to compensate for fuel burnup.

Reactor coolant system volume is 9,387 ft^3.

Isotope	Total Activity Curies
Kr-83m	4.01×10^{-7}
Kr-85m	6.55×10^{-2}
Kr-85	1.69×10^{3}
Kr-87	2.33×10^{-10}
Kr-88	1.11×10^{-3}
Xe-131m	3.84×10^{-1}
Xe-133m	5.30×10^{-2}
Xe-133	8.70×10^{1}
Xe-135m	5.60×10^{-3}
Xe-135	7.40×10^{-3}
I-131	Negligible
I-132	Negligible
I-133	Negligible
I-134	Negligible
I-135	Negligible

TABLE 6

Releases For Steam Generator Tube Rupture

Radionuclide	Q_i (Ci)
Kr-85m	1.15(2)*
Kr-85	6.55(2)
Kr-87	7.20(1)
Kr-88	1.92(2)
Xe-133m	1.87(2)
Xe-133	1.61(3)
Xe-135m	6.50(1)
Xe-135	1.95(2)
I-131	1.55
I-132	5.30(-1)
I-133	2.39
I-134	3.30(-1)
I-135	1.27

Modifications to Main Steamline Break Analysis of NUREG/CR-0036

TABLE 7

Assumption	Comment	Solution
1	Beaver Valley FSAR Analysis was based upon a primary coolant activity with 1.0% failed fuel rather than 0.5%	Multiply releases in Table XXXI by the ratio of (1.0/0.5) or 2
	The values in Table XXXI are based upon 3800 MWt. The Beaver Valley unit is 2766 MWt.	Multiply releases by the ratio of (2766/3800)
2	The secondary coolant concentrations are based upon 100 lb/day primary to secondary leak rate. The Beaver Valley FSAR accident bases its secondary concentrations on a 10 gpm leak rate.	Multiply releases by the ratio of $\frac{10\ \frac{gal}{min}\left(1440\ \frac{min}{day}\right)\left(8.3\ \frac{lb}{gal}\right)}{100\ lb/day}$ $= 1200$
3	Releases were based upon the concentration of Table 2.2-2 of NUREG-0017 for phosphate treatment.	
	The values in Table XXXI for a U-tube SG are for phosphate treatment. Beaver Valley uses all volatile treatment.	The releases in Table XXXI should be multiplied by the ratio of the volatile concentrations to the phosphate concentrations from NUREG-001 e. g. I-131 Phosphate U-tube Release (Table XXXI = $(0.1)\ 1.50\times10^{5}\ lb)\ (453.59\ \frac{g}{lb}) \times 1.1\times10^{-4}\ \frac{\mu Ci}{g}\left(\frac{10^{-6} Ci}{Ci}\right)$ $= 7.48\times10^{-4}$ Ci Note: the concentration was based upon 0.12% failed fuel in Table 2.2 of NUREG-0017. Fc 0.5% failed fuel multiply 7.48x1C by $\frac{0.5}{0.12}$ Release = 3.12×10^{-3} Ci This agrees with Table XXXI

TABLE 7

4	The entire mass of secondary coolant from one SG was assumed to be released to the atmosphere. This was assumed to be 150,000 lbs. The mass of liquid in the Beaver Valley's SG's is 99,712 lbs. The mass of steam is 6,576 lbs from the Beaver Valley Appendix I Analysis.	Since the steam concentration of radioiodines are 0.01 the concentrations in the liquid, the effective mass of liquid in the SG is 99,712 + 0.01 (6576) = 99,777 lbs. The values in Table XXXI should be multiplied by the ratio of ($99.7 \times 10^3 / 150. \times 10^3$).

TABLE XXXI

TABLE 7

RADIOACTIVITY RELEASED TO ENVIRONMENT FROM
LARGE STEAMLINE RUPTURE OUTSIDE CONTAINMENT BUILDING

Radionuclide	Radioactivity Released to Atmosphere (Ci) U-tube (Phosphate)	Once-through
Kr-83m	1.6(-6)[a]	1.6(-6)
Kr-85m	8.8(-6)	8.8(-6)
Kr-85	1.2(-5)	1.2(-5)
Kr-87	4.5(-6)	4.5(-6)
Kr-88	1.6(-5)	1.6(-5)
Kr-89	4.0(-7)	4.0(-7)
Xe-131m	8.8(-6)	8.8(-6)
Xe-133m	1.8(-5)	1.8(-5)
Xe-133	1.4(-3)	1.4(-3)
Xe-135m	1.0(-6)	1.0(-6)
Xe-135	2.7(-5)	2.7(-5)
Xe-137	7.1(-7)	7.1(-7)
Xe-138	3.4(-6)	3.4(-6)
Br-83	4.2(-6)	6.5(-8)
Br-84	5.7(-7)	3.4(-8)
Br-85	5.7(-9)	4.0(-9)
I-130	7.1(-6)	3.7(-8)
I-131	3.1(-3)	3.7(-6)
I-132	3.1(-4)	1.3(-6)
I-133	1.8(-3)	5.1(-6)
I-134	1.6(-5)	6.2(-7)
I-135	4.0(-4)	2.5(-6)
Cr-51	2(-7)[b]	3(-7)
Mn-54	6(-8)	6(-8)
Fe-59	2(-7)	2(-7)
Co-58	1(-7)	1(-7)
Co-60	2(-6)	2(-6)
Rb-86	1(-8)	2(-8)
Rb-88	2(-7)	6(-5)
Sr-89	6(-8)	6(-8)
Sr-90	1(-9)	1(-9)
Sr-91	2(-8)	8(-8)
Y-90	6(-10)	2(-10)
Y-91m	8(-9)	6(-8)
Y-91	8(-9)	8(-9)
Y-93	1(-9)	6(-9)
Zr-95	8(-9)	8(-9)

TABLE XXXI (continued)

Radionuclide	Radioactivity Released to Atmosphere (Ci) U-tube (Phosphate)	Once-through
Nb-95	8(-9)	6(-9)
Mo-99	8(-6)	1(-4)
Tc-99m	8(-6)	6(-5)
Ru-103	6(-9)	6(-9)
Ru-106	1(-9)	1(-9)
Rh-103m	6(-9)	6(-9)
Rh-106	1(-9)	1(-9)
Te-125m	3(-9)	3(-9)
Te-127m	3(-8)	3(-8)
Te-127	6(-8)	1(-7)
Te-129m	2(-7)	2(-7)
Te-129	2(-7)	2(-7)
Te-131m	1(-7)	1(-7)
Te-131	1(-7)	1(-7)
Te-132	2(-6)	3(-6)
Cs-134	3(-6)	6(-6)
Cs-136	1(-6)	3(-6)
Cs-137	2(-6)	4(-6)
Ba-137m	2(-6)	2(-6)
Ba-140	3(-8)	3(-8)
La-140	2(-8)	2(-8)
Ce-141	8(-9)	8(-9)
Ce-143	3(-9)	6(-9)
Ce-144	6(-9)	6(-9)
Pr-143	6(-9)	6(-9)
Pr-144	8(-9)	6(-9)
Np-239	8(-8)	2(-7)
Total	7(-3)	2(-3)
H-3	3(-1)	3(-1)

[a] Example: 1.6(-6) = 1.6×10^{-6}.

[b] Data accuracy to one significant digit.

Assumptions for Main Steamline Break from NUREG/CR-0036

5.1 Case I – Maximum Release Case (Large Steamline Break)

The assumptions and accident conditions for a large steamline break are in accordance with the general assumptions of NUREG-0099 (Regulatory Guide 4.2, Rev. 2) Appendix I[4], except where typical plant operating conditions indicate otherwise.

(1) The primary coolant activity is based on operation with 0.5% failed fuel[4] with the assumption that no further fuel failure results from the accident. The reactor is assumed to be operated at a core thermal power of 3800 MWt continuously for a period sufficient to establish equilibrium concentrations of the radioactive isotopes in the primary coolant (620 days).

(2) The secondary coolant system activity prior to the accident is based on a 100 lb/day primary-to-secondary leak rate.

(3) Prior to the accident, the iodine partition factor in a U-tube steam generator is assumed to be 0.1[3]. For a once-through steam generator, this factor is assumed to be 1.0[5]. Radionuclide concentrations in the secondary coolant prior to the accident were taken from Tables 2-2 and 2-3 of NUREG-0017, with appropriate corrections for iodine partition factor and for the assumed failed fuel rate of 0.5%.

(4) In that the worst case evaluated was that for a PWR with U-tube steam generators and phosphate water treatment, Tables XXXI and XXXII present releases from once-through steam generator plants and from U-tube steam generator plants with phosphate water treatment.

(5) The entire secondary coolant mass of one steam generator is assumed to be released to the atmosphere. For calculational purposes, the mass of the secondary coolant released was assumed to be 1.5×10^5 pounds.

TABLE 8

Releases For Main Steamline Break

Radionuclide	Q_i (Ci)
Kr-83m	1.86(-3)*
Kr-85m	1.02(-2)
Kr-85	1.39(-2)
Kr-87	5.23(-3)
Kr-88	1.86(-2)
Kr-89	4.65(-4)
Xe-131m	1.02(-2)
Xe-133m	2.09(-2)
Xe-133	1.63
Xe-135m	1.16(-3)
Xe-135	3.14(-2)
Xe-137	8.25(-4)
Xe-138	3.95(-3)
I-131	2.23(-1)
I-132	6.22(-2)
I-133	2.86(-1)
I-134	1.24(-2)
I-135	1.26(-1)

* 1.86(-3) = 1.86×10^{-3}

TABLE 9

Releases For the Fuel Handling Accident

Radionuclide	Q_i (Ci)
Kr-85	8.15(3)*
Xe-131m	1.34(5)
Xe-133m	1.90(4)
Xe-133	1.13(6)
Xe-135	2.18(3)
I-131	2.34(2)
I-132	2.08(2)
I-133	2.61
I-135	2.09(-2)

*8.15(3) = 8.15×10^3

TABLE 10

Noble Gas Releases For A LOCA

Radionuclide	Q_i (Ci)
Kr-83m	4.42(2)*
Kr-85m	2.99(1)
Kr-85	1.28(3)
Kr-87	1.89(3)
Kr-88	3.09(3)
Kr-89	3.41(2)
Xe-131m	2.16(1)
Xe-133m	6.54
Xe-133	1.66(2)
Xe-135m	6.26(2)
Xe-135	1.70(3)
Xe-138	2.16(3)

*4.42(2) = 4.42×10^2

TABLE 11

Radioiodine Releases to the
Environment For a LOCA

Radionuclide	Q_i (Ci)
I-131	6.47(1)*
I-132	9.47(1)
I-133	1.44(2)
I-134	1.53(2)
I-135	1.30(2)

*6.47(1) = 6.47×10^1

TABLE 12

Breathing Rates For Various Age Groups

	Annual	Daily	8 hour	Accident
Age Group	Breathing Rate (m^3/yr)	Breathing Rate (m^3/day)	Breathing Rate (m^3/8 hr)	Breathing Rate (m^3/sec)
Adult	8,000	21.9	11.0	3.81×10^{-4}
Teenager	8,000	21.9	11.0	3.81×10^{-4}
Child	3,700	10.1	5.07	1.76×10^{-4}
Infant	1,400	3.84	1.92	6.66×10^{-5}

Table 13

Tab 6 Dose Factors

Accident	Whole Body Dose Factor
Volume Control Tank Rupture	1.99 E1
Gas Surge Tank Rupture	1.68 E0
Steam Generator Tube Rupture	1.42 E2
Main Steam Line Break	2.87 E-2
Fuel Handling Accident	1.12 E4
LOCA	2.80 E3

	----Thyroid Dose factor----				---From Child To:---		
Accident	Adult	Teen	Child	Infant	Adult	Teen	Infant
Volume Control Tank Rupture	negl	negl	negl	negl	negl	negl	negl
Gas Surge Tank Rupture	negl	negl	negl	negl	negl	negl	negl
Steam Generator Tube Rupture	1.16 E3	1.46 E3	1.69 E3	1.55 E3	0.69	0.86	0.92
Main Steam Line Break	1.59 E2	1.99 E2	2.30 E2	2.11 E2	0.69	0.86	0.92
Fuel Handling Accident	1.37 E5	1.68 E5	1.87 E5	1.71 E5	0.73	0.9	0.91
LOCA	5.50 E4	6.99 E4	8.25 E4	7.54 E4	0.67	0.85	0.91

TABLE 2.1-2 MONITOR DETECTOR EFFICIENCIES

RADIONUCLIDE	(1GW-108B) GASEOUS WASTE GAS MONITOR (E_1) (cpm/μCi/cc)	(1VS-107B) ELEVATED RELEASE GAS MONITOR (E_1) (cpm/μCi/cc)
Kr-83m	-	-
Kr-85m	1.29E8	7.62E7
Kr-85	9.35E5	7.92E7
Kr-87	1.67E8	1.63E8
Kr-88	1.36E8	8.40E7
Kr-89	7.64E8	1.67E8
Kr-90	2.58E8	1.55E8
Xe-131m	3.12E6	-
Xe-133m	1.32E7	6.16E7
Xe-133	1.33E7	3.50E7
Xe-135m	9.43E7	2.13E7
Xe-135	1.52E8	9.77E7
Xe-137	4.13E7	1.69E8
Xe-138	3.93E8	1.48E8
Ar-41	9.60E7	1.13E8

Table 15

Tab 8 Dose Factors

Nuclide	RG1.109 DCF	Tab 8 Dose Factor
Kr-83m	7.56 E-8	2.40 E-12
Kr-85m	1.17E-3	3.71 E-8
Kr-85	1.61 E-5	5.10 E-10
Kr-87	5.92 E-3	1.88 E-7
Kr-88	1.47 E-2	4.66 E-7
Kr-89	1.66 E-2	5.26 E-7
Kr-90	1.56 E-2	4.95 E-7
Xe-131m	9.15 E-5	2.90 E-9
Xe-133m	2.51 E-4	7.96 E-9
Xe-133	2.94 E-4	9.32 E-9
Xe-135m	3.12 E-3	9.89 E-8
Xe-135	1.81 E-3	5.74 E-8
Xe-137	1.42 E-3	4.50 E-8
Xe-138	8.83 E-3	2.80 E-7

Nuclide	Target	RG1.109 DCF	Tab 8 Dose Factor
I-131	Child	4.39 E-3	7.73 E-4
I-132	Child	5.23 E-5	9.20 E-6
I-133	Child	1.04 E-3	1.83 E-4
I-134	Child	1.37 E-5	2.41 E-6
I-135	Child	2.14 E-4	3.77 E-5
I-131	Adult	1.49 E-3	5.68 E-4
I-132	Adult	1.43 E-5	5.45 E-6
I-133	Adult	2.69 E-4	1.02 E-4
I-134	Adult	3.73 E-6	1.42 E-6
I-135	Adult	5.60 E-5	2.13 E-5
I-131	Teen	1.83 E-3	6.97 E-4
I-132	Teen	1.89 E-5	7.20 E-6
I-133	Teen	3.65 E-4	1.39 E-4
I-134	Teen	4.94 E-6	1.88 E-6
I-135	Teen	7.76 E-5	2.96 E-5
I-131	Infant	1.06 E-2	7.06 E-4
I-132	Infant	1.21 E-4	8.06 E-6
I-133	Infant	2.54 E-3	1.69 E-4
I-134	Infant	3.18 E-5	2.12 E-6
I-135	Infant	4.97 E-4	3.31 E-5

Table 16

Tab 9 Dose Factors

Nuclide	RG1.109 DCF	Tab 9 Dose Factor
Kr-83m	7.56 E-8	2.40 E-6
Kr-85m	1.17E-3	3.71 E-2
Kr-85	1.61 E-5	5.10 E-4
Kr-87	5.92 E-3	1.88 E-1
Kr-88	1.47 E-2	4.66 E-1
Kr-89	1.66 E-2	5.26 E-1
Kr-90	1.56 E-2	4.95 E-1
Xe-131m	9.15 E-5	2.90 E-3
Xe-133m	2.51 E-4	7.96 E-3
Xe-133	2.94 E-4	9.32 E-3
Xe-135m	3.12 E-3	9.89 E-2
Xe-135	1.81 E-3	5.74 E-2
Xe-137	1.42 E-3	4.50 E-2
Xe-138	8.83 E-3	2.80 E-1

Nuclide	Target	RG1.109 DCF	Tab 9 Dose Factor
I-131	Child	4.39 E-3	7.73 E2
I-132	Child	5.23 E-5	9.20 E0
I-133	Child	1.04 E-3	1.83 E2
I-134	Child	1.37 E-5	2.41 E0
I-135	Child	2.14 E-4	3.77 E1
I-131	Adult	1.49 E-3	5.68 E2
I-132	Adult	1.43 E-5	5.45 E0
I-133	Adult	2.69 E-4	1.02 E2
I-134	Adult	3.73 E-6	1.42 E0
I-135	Adult	5.60 E-5	2.13 E1
I-131	Teen	1.83 E-3	6.97 E2
I-132	Teen	1.89 E-5	7.20 E0
I-133	Teen	3.65 E-4	1.39 E2
I-134	Teen	4.94 E-6	1.88 E0
I-135	Teen	7.76 E-5	2.96 E1
I-131	Infant	1.06 E-2	7.06 E2
I-132	Infant	1.21 E-4	8.06 E0
I-133	Infant	2.54 E-3	1.69 E2
I-134	Infant	3.18 E-5	2.12 E0
I-135	Infant	4.97 E-4	3.31 E1

EMERGENCY RESPONSE CENTER DIRECTORY

A. PURPOSE

This annex describes the location of the various emergency response centers -- both those of Duquesne Light and those of the offsite agencies. Emergency telephone numbers and radio frequencies are provided as applicable. Note that this communication listing is not all-inclusive, other communications capabilities exist.

Maps attached to this annex provide directions to the more significant emergency response centers.

B. EMERGENCY RESPONSE CENTER DIRECTORY

NOTE

DLC PAX lines can be cross-connected with Bell Lines, incoming and outgoing, via the DLC switchboard (412) 456-6000

The telephone numbers and radio frequencies identified herein are generally designated for emergency use only, and should not be used for routine administrative communications.

1. DLC Technical Support Center (activated for Alert & higher emergencies)

The DLC Technical Support Center (TSC) is located onsite in the BVPS Administration Bldg. on the lower level.

Telephone: (412) 643-5010/5224/5012/5502/5204/5017/5014/5502/5284/
/5016/5304/5500
NRC OPX Hotline*
NRC HPN Hotline* (Station 32)

Radio: 153.47

*located nearby in Resident Inspector's office

2. DLC Control Room

The DLC Control Room is located within the BVPS protected area.

Telephone: (412) 643-8000/8001/8002*
PAX 5172/5102
NRC OPX Hotline
NRC HPN Hotline (Station 33)
DER/BRP Hotline

Radio: 153.47, 48.3

*During an emergency, calls to 8000/8001/8002 will be automatically routed to the first free line, regardless of the number dialed.

3. DLC Emergency Operations Facility (Activated for Site Area or General Emergencies)

The DLC Emergency Operations Facility (EOF) is located onsite in the lower level of the BVPS Administration Bldg.

Communications: See TSC listing.

4. Alternate DLC Emergency Operations Facility

The alternate EOF is activated for Site Area or General Emergencies only if the primary EOF is uninhabitable.

The Alternate EOF is the DLC South Heights District Office located in South Heights, PA on Route 51.

Telephone: (412) 375-6645/6646/9291
PAD 2542/2554/2337/2556/2340/2529

Radio: 153.47, 48.3

5. DLC Emergency News Center

The DLC Emergency News Center is activated for Site Area or General Emergencies. For lesser emergencies, contact the DLC Public Infomration Division at (412) 456-6527/6281/6269.

The DLC Emergency News Center is located at the Willows Motel in Industry, PA on Route 68.

Telephone: (412) 643-4500 (Willows swbd)
PAX 2388/2389/2390/2393 (PID trailer)

6. USNRC Resident Inspector

Telephone: (412) 643-9200/9201
NRC OPX Hotline
NRC HPN Hotline (Station 32)

7. USNRC Region 1

Telephone: (412) 337-5000 (24-hour)
NRC OPX Hotline
NRC HPN Hotline (Station 23)

8. USNRC Headquarters

Telephone: 1-202-951-0550 (24-hour)
1-301-427-4056
1-301-492-7000
NRC OPX Hotline
NRC HPN Hotline (Station 22)

9. Commonwealth of Pennsylvania (PEMA)

PEMA will operate primarily out of Harrisburg, PA. A field EOC may be established at the Blackhawk High School during an emergency.

Telephone: (717) 78308150 (Harrisburg)

10. State of Ohio

The State of Ohio EOC is located in Columbus, OH. A field EOC may be established in Columbiana County during an emergency

Telephone: (614) 889-7150/7157/7185
Radio: 47, 155.37, 150.7/150.1, 4.6415

11. State of West Virginia

The State of West Virginia EOC is located in Charleston, WV. Representatives from WVOES and DH/IHD may be dispatched to BVPS EOF during an emergency.

Telephone: (304) 348-5380/6370
Radio: 3.998

12. Beaver County Emergency Management Agency (BCEMA)

The BCEMA EOC is located on East End Avenue in Beaver in the old train station.

Telephone: (412) 775-0880

Radio: 3.998, 153.47, 155.340 (EMS)

13. Columbiana County Disaster Service Agency (CCDSA)

The CCDSA EOC is located in the CCDSA building on Richardson Avenue in Negley, OH.

Telephone: (216) 424-9725/7255

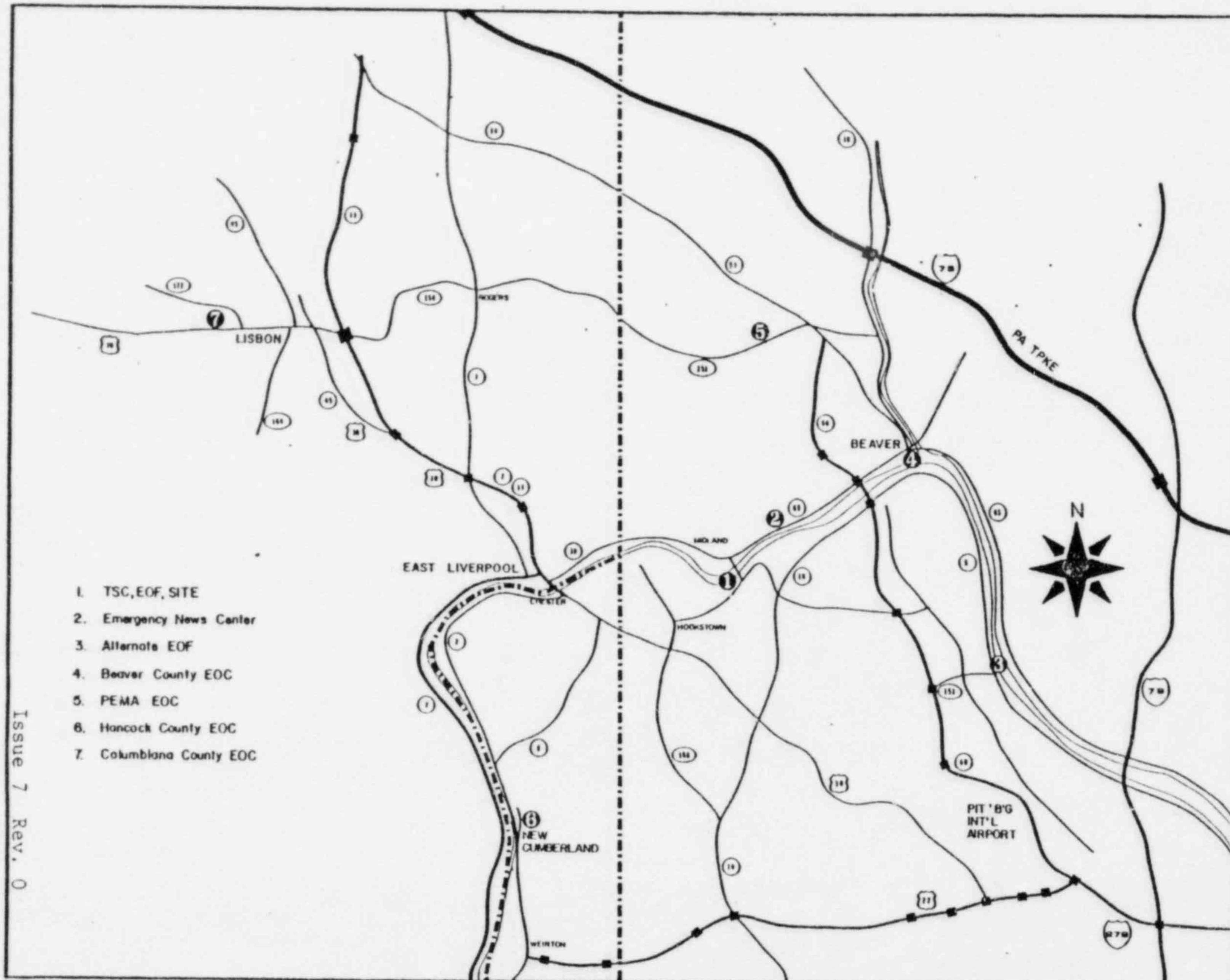
Radio: 155.47, 4.6415, 153.47

14. Hancock County Office of Emergency Services

The HCOES EOC is located in the Hancock County Courthouse in New Cumberland, WV.

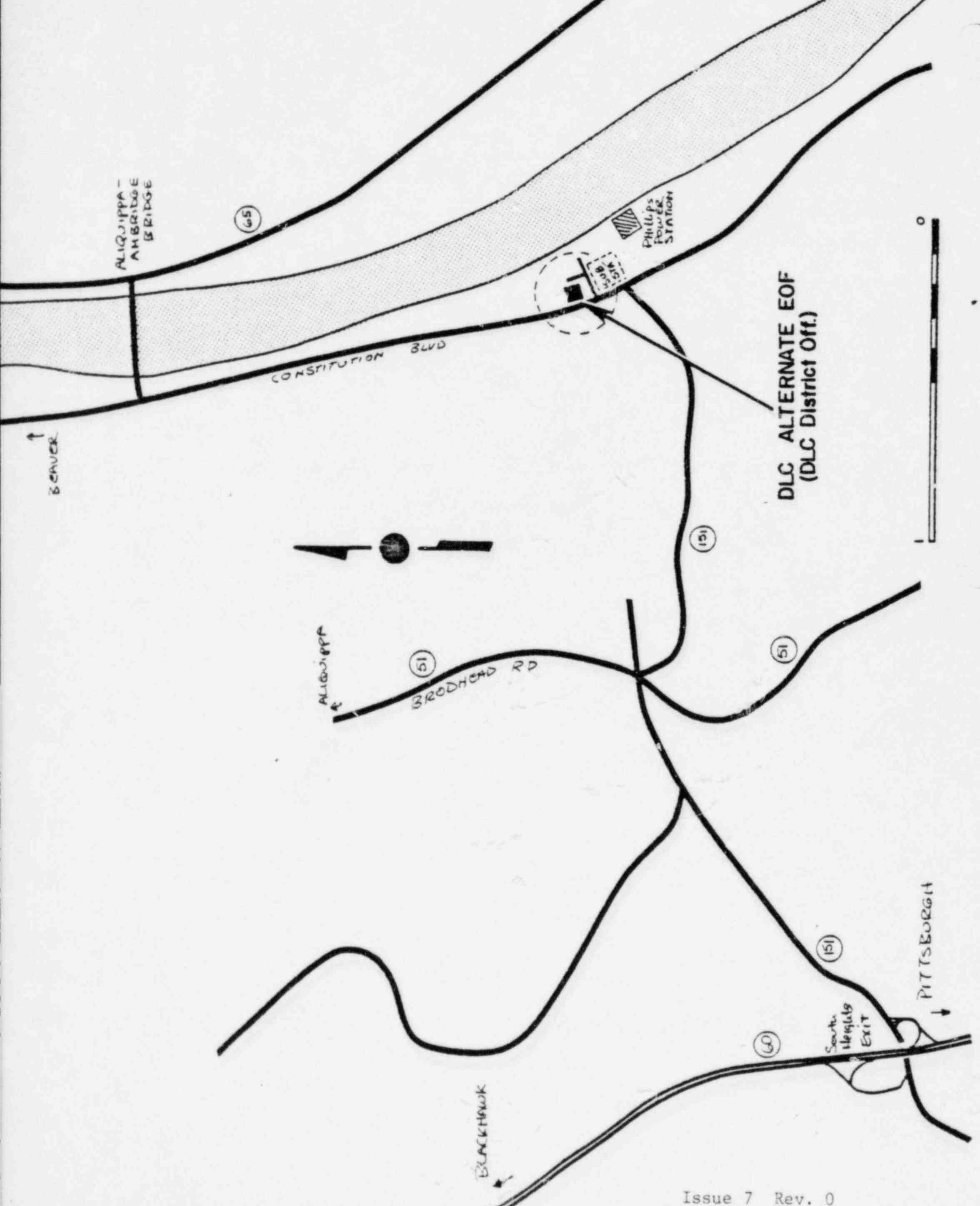
Telephone: (304) 564-3311

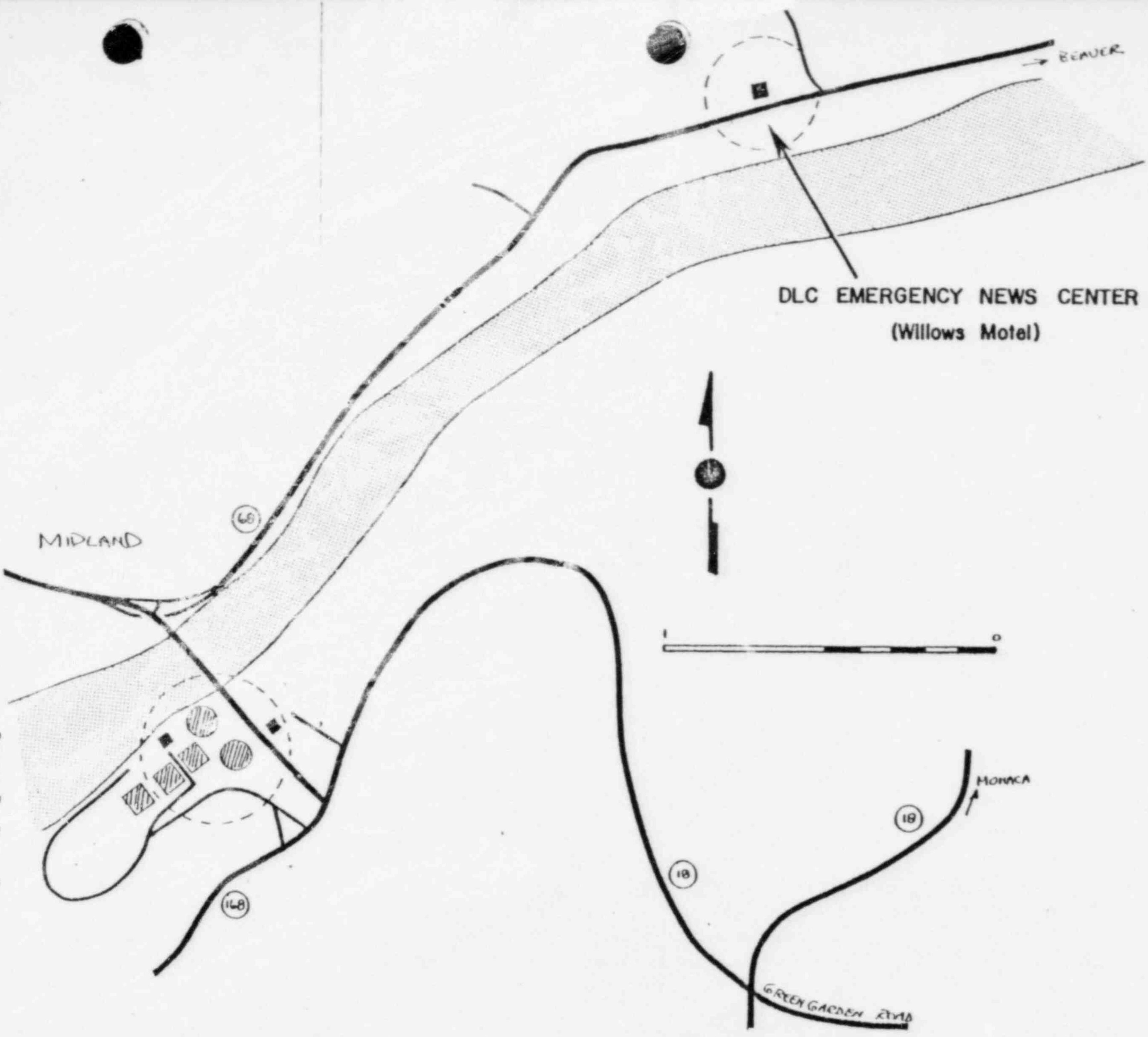
Radio: 3.998, 155.340, 153.47

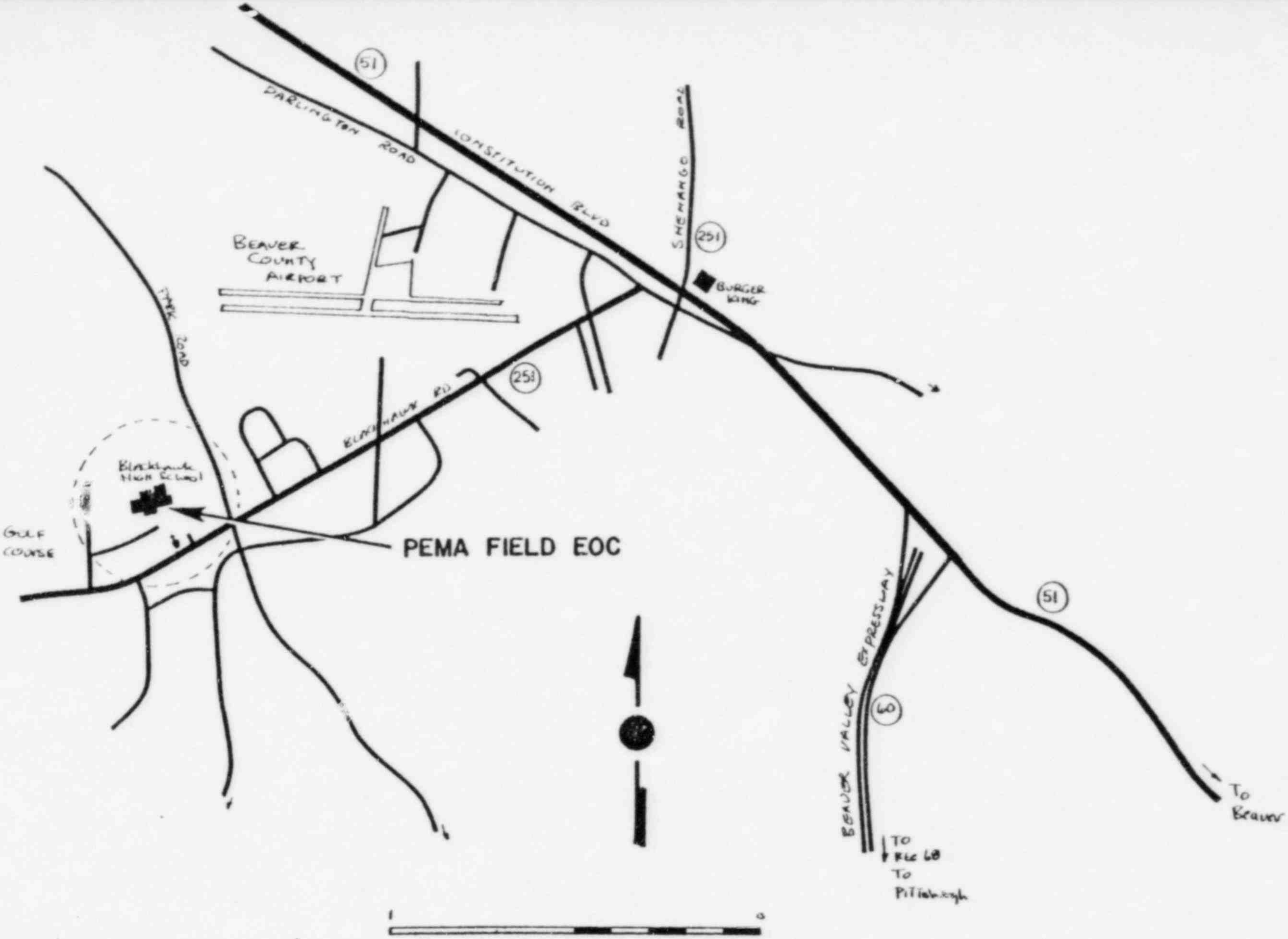


EMERGENCY RESPONSE CENTERS

Duquesne Light
BEAVER VALLEY POWER STATION
EMERGENCY PREPAREDNESS PLAN


ALIQUIPPA-AMBRIDGE BRIDGE
65
PHILLIPS POWER STATION
SUB STA
DLC ALTERNATE EOF
(DLC District Off.)
CONSTITUTION BLVD
BEAVER
151
51
BRODHEAD RD
ALIQUIPPA
151
60
South Heights Exit
PITTSBURGH
BLACKHAWK


BEAVER
DLC EMERGENCY NEWS CENTER
(Willows Motel)
MIDLAND
68
1
0
168
18
MONACA
18
GREEN GARDEN ROAD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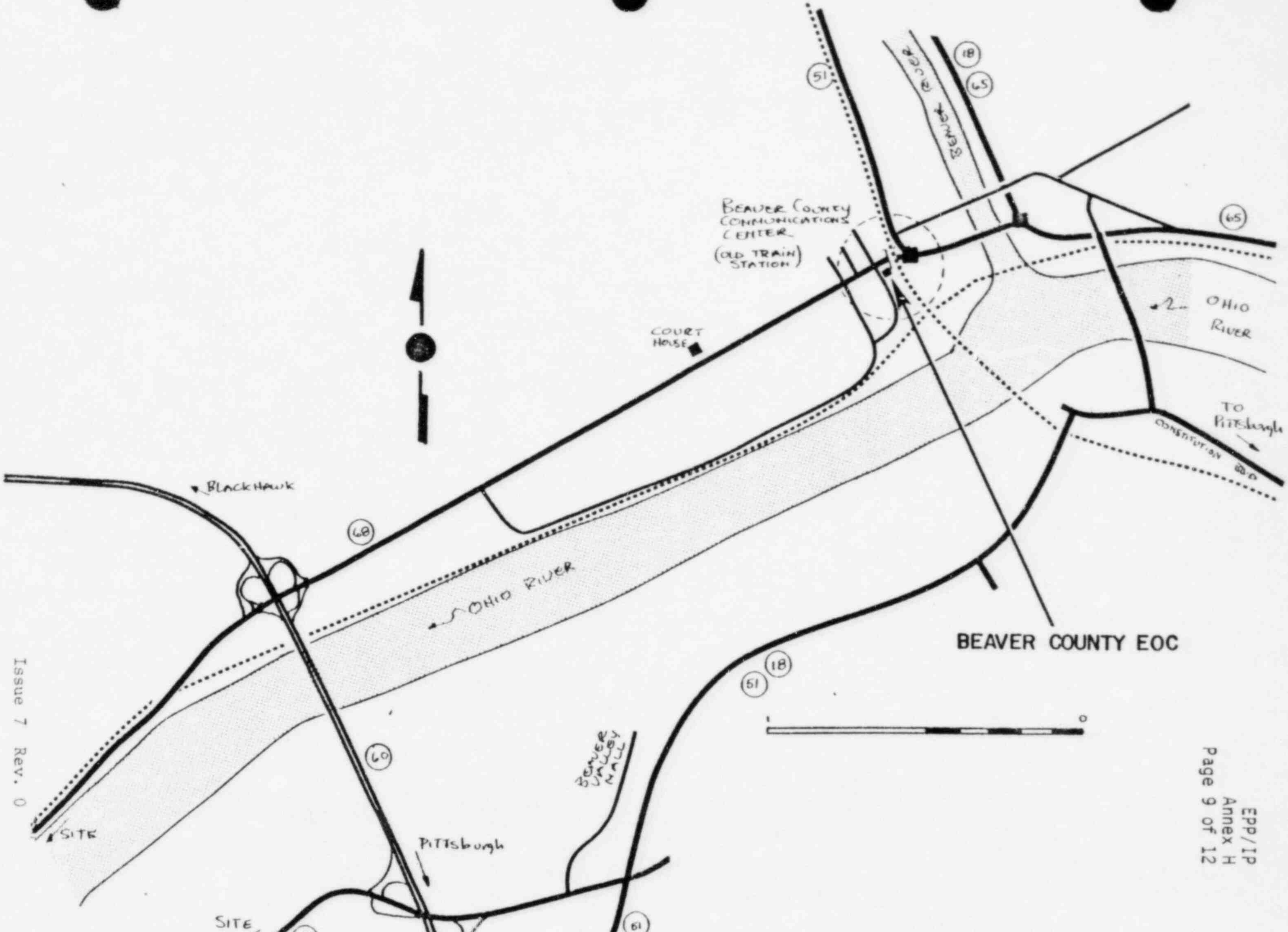
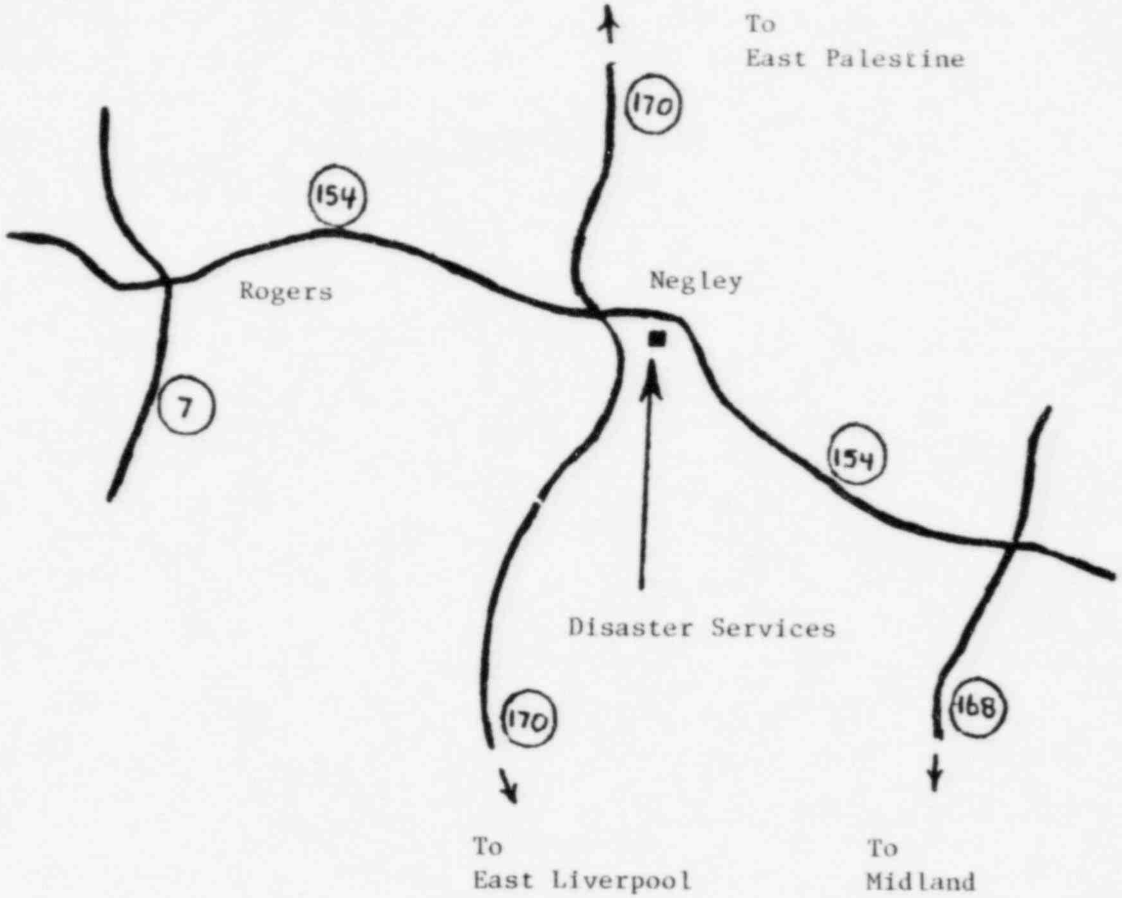
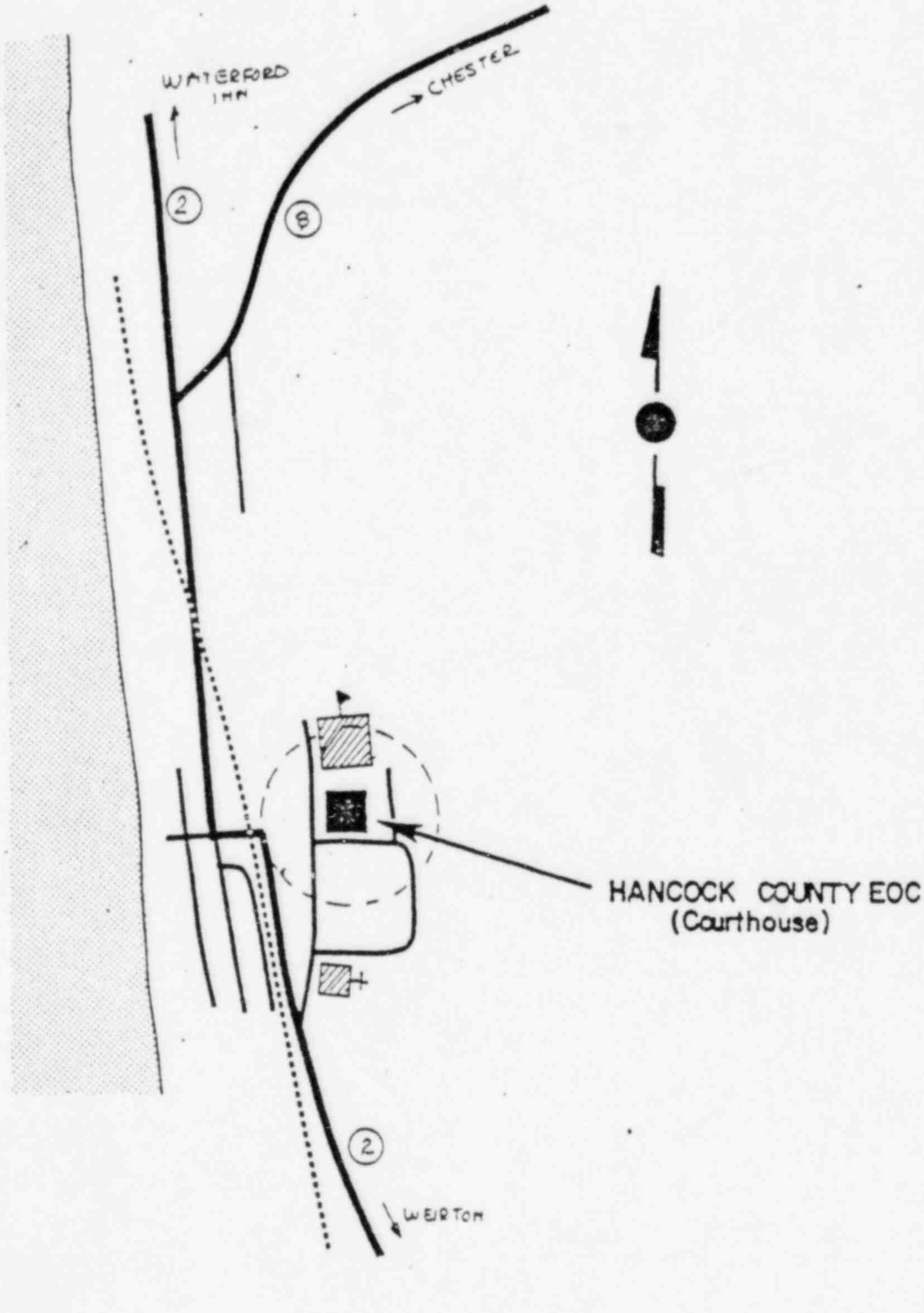
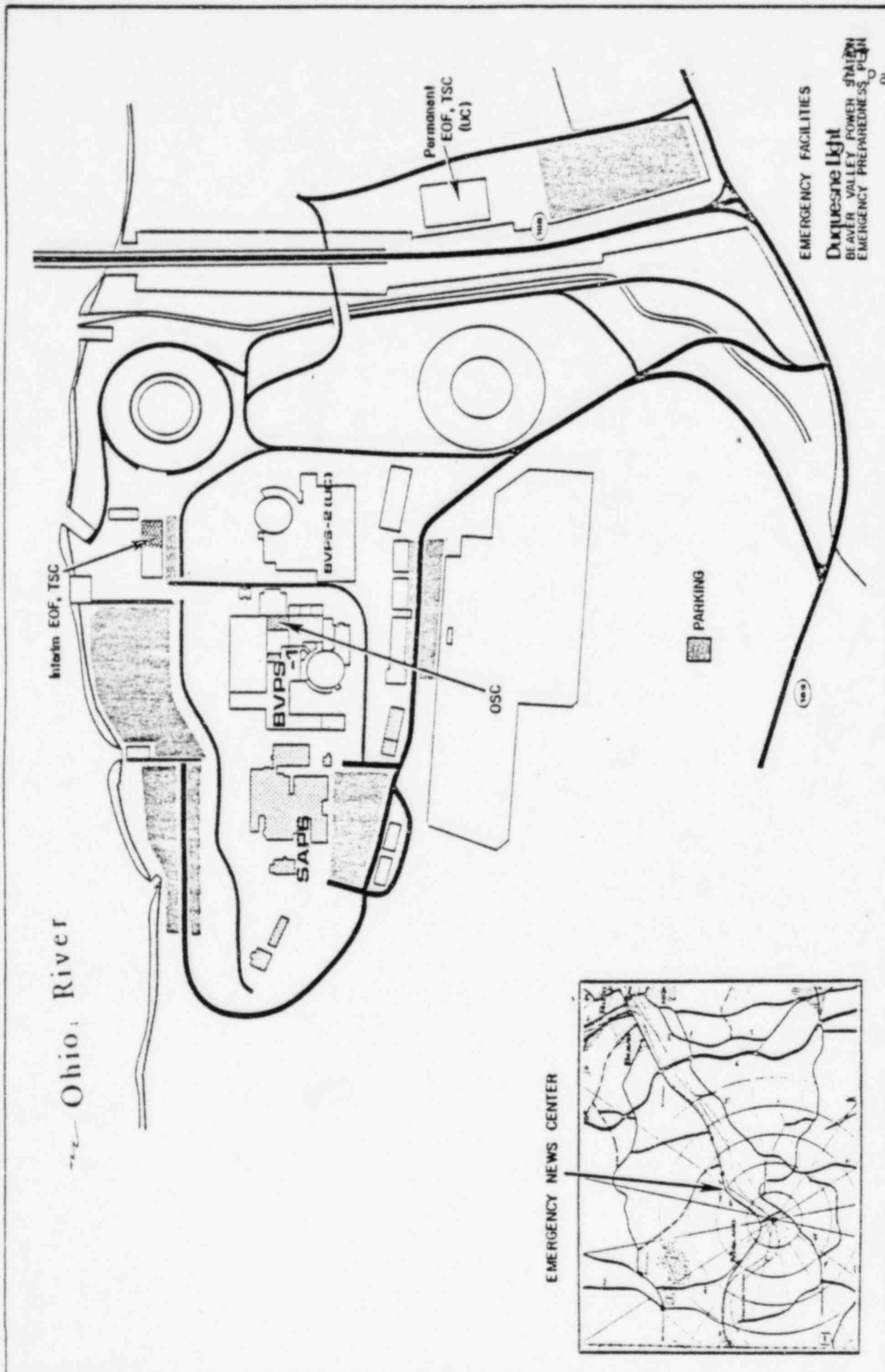
DARLINGTON ROAD
CONSTITUTION BLVD
SHENANGO ROAD
251
BURGER KING
BEAVER COUNTY AIRPORT
PARK ROAD
BLACKHAWK RD
251
Blackhawk High School
GOLF COURSE
PEMA FIELD EOC
51
BEAVER VALLEY EXPRESSWAY
60
To Beaver
To Rte 60
To Pittsburgh
1
0



51
BEAVER RIVER
18
65
BEAVER COUNTY COMMUNICATIONS CENTER
(OLD TRAIN STATION)
COURT HOUSE
65
OHIO RIVER
TO Pittsburgh
CONSTITUTION BLVD
BLACKHAWK
68
OHIO RIVER
BEAVER COUNTY EOC
18
51
60
BEAVER VALLEY MALL
SITE
Pittsburgh
SITE
18
61


To
East Palestine
170
154
Rogers
Negley
7
154
Disaster Services
170
168
To
East Liverpool
To
Midland


WATERFORD INN
CHESTER
2
8
HANCOCK COUNTY EOC
(Courthouse)
2
WEIRTON


Ohio River
Interim EOF, TSC
Permanent EOF, TSC (UC)
BVPS-1
BVPS-2 (UC)
SAPS
OSC
PARKING
EMERGENCY NEWS CENTER
EMERGENCY FACILITIES
Duquesne Light
BEAVER VALLEY POWER STATION
EMERGENCY PREPAREDNESS PLAN

ANNEX X

DUQUESNE LIGHT COMPANY
Beaver Valley Power Station

Emergency Preparedness Plan

Records Transmittal for
Controlled Copies of EPP

Date____/______/______

Title	Section(s) or Annexes	Issue or Revision Number	Record Date	Number of Pages	Transfer & Reciept

(/) - records transmitted (\) - records received

I verify that the records transmitted are in agreement with this transmittal document, and are in good condition.

______________________________ ___/___/___
(Person Transmitting Records) (Date)

I verify that the records received are in agreement with this transmittal document, and are in good condition.

______________________________ ___/___/___
(Recipient) (Date)

This form is to be returned to the BVPS office to be filed in the Records Room.

______________________________ ___/___/___
(Filed By) (Date)

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