Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/01
Change(s) 1 to
2 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: CLASSIFICATION OF EMERGENCY

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter M. LeRoy DATE: 8/30/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
CLASSIFICATION OF EMERGENCY

1.0 SYMPTOMS

1.1 Notification of Unusual Event

1.1.1 Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant.

1.1.2 No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety occurs.

1.2 Alert

1.2.1 Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant.

1.2.2 Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

1.3 Site Area Emergency

1.3.1 Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public.

1.3.2 Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except near the site boundary.

1.4 General Emergency

1.4.1 Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.

1.4.2 Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

2.0 IMMEDIATE ACTIONS

2.1 Compare actual plant conditions to the Emergency Action Level(s) listed in Enclosure 4.1 then declare the appropriate Emergency Class as indicated.

2.2 Refer to the applicable Emergency Response Procedure (RP) for the classification found in Enclosure 4.1:

Notification of Unusual Event	RP/0/A/5000/02
Alert	RP/0/A/5000/03
Site Area Emergency	RP/0/A/5000/04
General Emergency	RP/0/A/5000/05

3.0 SUBSEQUENT ACTIONS

3.1 To escalate, de-escalate or close out the Emergency, compare plant conditions to the Initiating Conditions of Enclosure 4.2.

4.0 ENCLOSURES

4.1 Emergency Event List for Emergency Classes

Event No.		Page(s)
4.1.1	Primary Coolant Leak	1 & 2
4.1.2	Fuel Damage	3
4.1.3	Steam System Failure	4
4.1.4	High Radiation/Radiological Effluents	5
4.1.5	Loss of Shutdown Function	6
4.1.6	Loss of Power	7
4.1.7	Fires and Security Actions	8
4.1.8	Loss of Alarms and/or Communication	9
4.1.9	Spent Fuel Damage	10
4.1.10	Natural Disasters and Other Hazards	11
4.1.11	Other Abnormal Plant Conditions	12 & 13
4.1.12	Contaminated and Injured Individual	14

4.2 Emergency Classification Guide Flowchart

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT #: 4.1.1 Primary Coolant Leak

Class Notification of Unusual Event

1. NC Leakage > Tech. Specs. LCO:

- •NC leak > 10 gpm identified primary leakage
- •> 500 gpd from any S/G
- •> 1 gpm total P-S through all S/G
- •Any press boundary leakage
- •> 1 gpm unidentified leakage
- •> 40 gpm controlled leakage at 2235 psig
- •> 1 gpm from NC press isolation valve at 2235 psig

2. Failure of a PZR PORV or safety valve to close following a reduction of NC press:
- •Valid accoustical monitor indication of valve failure.

END

Alert

1. NC Leak > 50 gpm
2. P-S Leak > 10 gpm

AND

a steam line break.

SYMPTOMS

Rapidly decreasing:

- •NC Tavg
- •PZR Press
- •PZR Level

AND

- •EMF-33 & 34 in alarm.
- •Steam Line Radiation Monitor in alarm on the affected S/G.
- •Steam line low Press S/I signal with increasing Containment press (if break in Containment).
- •High steam flow and
- •Low-Low Tavg

CONTINUED

Site Area Emergency

1. NC Leak > Total ECCS capacity:

SYMPTOMS

- •PZR Low Press Rx Trip
- •PZR Low Press S/I Signal
- •High Containment Press
- •High Containment Humidity
- •High Containment Sump level
- •EMF-38, 39 & 40 in alarm

2. Several hundred gpm P-S leakage

AND

loss of offsite power:

SYMPTOMS

- •PZR Low Press Alarm
- •PZR Low Press Rx Trip
- •PZR Low Level Alarm
- •EMF-33 & 34 in alarm
- •Steam Line Radiation Monitor in alarm on the affected S/G.

AND

- •UV alarm on 7KV buses

CONTINUED

General Emergency

1. Small or large LOCA with failure of ECCS, [redacted] leads to core melt:

SYMPTOMS

- •S/I signal and Rx trip

AND

- •N/I & ND pumps not running

AND

- •N/I flow indicates "No flow"

AND

- •High Containment Sump level

2. Small LOCA and initially successful ECCS with failure of NS system over several hours, leads to core melt and failure of containment:

SYMPTOMS

- •PZR low press Rx trip
- •PZR low press S/I signal
- •NC temperature is rising

AND

- •NS flow indicators show "No flow" after > 2 hours

END

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.1: Primary Coolant Leak (Continued)

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
	3. Failure of one S/G tube AND loss of offsite power: SYMPTOMS •PZR low press alarm •PZR low press trip •PZR low level alarm •PZR low press S/I signal •EMF-33 & 34 in alarm •Steam Line Radiation Monitor in alarm on the affected S/G. AND •UV alarm on all 7 KV buses	3. > 50 gpm P-S leakage AND a steam line break AND identification of fuel damage. SYMPTOMS Rapidly decreasing: •NC Tavg •PZR Press •PZR Level •EMF-33 & 34 in alarm •Steam Line Radiation Monitor in alarm on the affected S/G AND •Steam line low Press S/I signal with increasing containment press AND (if steam line break is in containment) •EMF-53A and/or B indicates ≥ 3R/hr •High steam flow and Low-Low Tavg AND •EMF-48 in alarm END	
	4. Failure > 10 S/G tubes: Several hundred gpm P-S leak: SYMPTOMS •PZR low press alarm •PZR low press Rx trip •PZR low level alarm •PZR low press S/I signal AND •EMF-33 & 34 in alarm •Steam Line Radiation Monitor in alarm on the affected S/G. END		

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVELS FOR

EVENT # 4.1.2: Fuel Damage

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
1. High coolant activity: a. > 1 μCi/gram Dose Equivalent I-131 or > 100 μCi/Gram $\bar{E}$ gross activity. b. > 0.1% increase in fuel failure within 30 min. OR 1% to 5% fuel failures SYMPTOMS •EMF-48 alarm AND •I-131 concentration increases by 4 μCi/ml over a 30 min. period OR •I-131 concentration 40 μCi/ml to 200 μCi/ml Note: Determined by laboratory analysis END	1. Severe loss of fuel cladding; mechanical clad failure: a. Very high coolant activity sample 200 μCi/ml to 1000 μCi/ml equivalent I-131. b. EMF-48 indicates increase > 1% fuel failures (> 40 μCi/ml) within 30 min. OR •5% to 25% total fuel failures (> 200 μCi/ml I-131) Note: Determined by laboratory analysis 2. NC pump seizure leads fuel failure: SYMPTOMS •NC pump trip alarm AND •Rx trip on low flow AND •> 1% increase fuel failures within 30 min. (> 40 μCi/ml within 30 min.) OR •5% total fuel failures (> 200 μCi/ml I-131) Note: Determined by laboratory analysis END	1. Degraded core with possible loss of coolable geometry: •Inadequate Core Cooling See EP/1/A/5000/2B •Mechanical Clad failure > 1000 μCi/ml I-131 •Severe fuel Overtemperature 1% to 10% fuel failures as estimated by AP/0/A/5500/31 •Fuel Melt .5% to 5% fuel failures as estimated by AP/0/A/5500/31 Note: Determined by laboratory analysis END	1. Loss of 2 of 3 fission product barriers with a potential for loss of 3rd barrier: a. LOCA as identified in Event 4.1.1 Site Area Emergency, Item #1 AND Incomplete Cont. Isol b. LOCA as identified in Event 4.1.1 Site Area Emergency, Item #1 AND •EMF-53A and/or B > 10 R/hr AND •Containment press > 14.8 psig for at least 2 minutes. 2. Severe Fuel Damage •Fuel Overtemperature > 10% fuel failures as estimated by AP/0/A/5500/31 •Fuel Melt > 5% fuel failures as estimated by AP/0/A/5500/31 END

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.3: Steam System Failure

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
1. Failure of a safety or PORV on an S/G to close, following a reduction of SM pressure. 2. Rapid depressurization of secondary side: SYMPTOMS a. S/I signal b. As observed END	1. P-S Leak > 10 gpm AND a steam line break SYMPTOMS Rapidly decreasing: •NC Tavg •PZR Press •PZR level AND •EMF-33 & 34 in alarm. •Steam Line Radiation Monitor in alarm on the affected S/G. •Steam line low Press S/I signal with increasing Containment press (if break in Containment). •High steam flow and •Low-Low Tavg. END	1. > 50 gpm P-S leakage AND a steam line break AND identification of fuel damage. SYMPTOMS Rapidly decreasing: •NC Tavg •PZR Press •PZR level •EMF-33 & 34 in alarm •Steam Line Radiation Monitor in alarm on the affected S/G. AND •Steam line low Press S/I signal with increasing containment press AND (if steam line break is in containment) •EMF-53A and/or B indicates > 3R/hr. •High steam flow and low-low Tavg AND •EMF-48 in alarm. END	N/A

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.4: High Radiation/Radiological Effluents

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
1. Radiological Effluents Tech Specs Exceeded: SYMPTOMS •EMF-31, 35, 36, 37, 49 or 50 in alarm AND •uncontrolled releases continued indicating Radiological Effluent Tech. Specs. exceeded. END	1. High radiation level or high airborne contamination: Increase by a factor of 1000 in radiation monitor readings within station. 2. Airborne radiological effluents > 10X TS limits (instantaneous rate): SYMPTOMS •EMF-35 Low Range $\geq 6.2 \times 10^{4}$ cpm •EMF-36 Low Range $\geq 1.7 \times 10^{5}$ cpm High Range $\geq 2.5 \times 10^{1}$ cpm END	1. Radiological effluents > 50 mr/hr for 30 min. OR > 500 mr/hr Whole Body for 2 min. (or 5X these levels to Thyroid) at the site boundary: SYMPTOMS •EMF-35 Low Range offscale High Range > 1.3×10^{1} cpm •EMF-36 Low Range offscale High Range 4.4×10^{3} cpm •EMF-37 change of 143 cpm/minute for 30 minutes or a change of of 1430 cpm/minute for 2 minutes as determined from recorder trace. END	1. Effluent monitor detect levels corresponding to: [redacted] 1 R/hr Whole Body OR 5 R/hr Thyroid at the Site Boundary: SYMPTOM •EMF-37 change of 2800 cpm/minute over any time interval as determined from recorder trace. END

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.5: Loss of Shutdown Functions

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
N/A	1. Complete loss of function needed for plant cold shutdown: SYMPTOMS •ND not functional AND •Inability to maintain natural or forced cool-down. 2. Failure of the Reactor Protection System to initiate and complete a trip which brings the reactor subcritical: •Reactor remains critical after all attempts to trip have been completed. END	1. Complete loss of functions needed for plant hot shutdown: SYMPTOMS •Inability to establish NV pump injection AND •Inability to establish CA flow OR •Inability to establish KC flow. 2. TRANSIENT requiring operation of shutdown system with failure to to trip: •Reactor remains critical after all attempts to trip have been completed. END	1. Transient requiring Rx trip with failure to trip. Additional failure of core cooling and ECCS would lead to core melt. SYMPTOMS •Rx remains critical after all attempts to trip the Rx are complete AND •No ND and NI flow indicated. 2. Transient initiated by loss and CF and CM Systems followed by failure of CA System for extended period. Core melting is possible in several hours with ultimate failure of containment likely: SYMPTOMS •Rx trip on lo-lo S/G level AND •wide range S/G level toward offscale low on all S/G AND •No CA flow indicated OR •CA pumps not running and cannot be restored within 30 minutes END

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.6: Loss of Power

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
1. Loss of offsite Power: SYMPTOM •UV alarm on all 7 KV buses 2. Loss of onsite power capability: SYMPTOMS •Main generator incapable of supplying in-house loads AND •Both D/G's inoperable END	1. loss of offsite power and loss of all onsite AC power for ≤ 15 min. SYMPTOMS •UV alarm on all 7 KV buses AND •UV alarm on 4160V buses 2. Loss of all vital DC buses for ≤ 15 min. SYMPTOM •UV alarm on all vital DC buses END	1. loss of offsite power and loss of all onsite AC power for > 15 min. SYMPTOMS •UV alarms on all 7 KV buses AND •UV alarm on 4160V buses 2. loss of all vital DC power for > 15 min. SYMPTOM •UV alarm on all vital DC buses END	1. failure of offsite and onsite power with total loss of CA makeup for several hours, leads to core melt and failure of containment: SYMPTOMS •UV alarms on all 7 KV buses AND •Blackout load sequencer actuated AND •CA pump(s) fail to start. END

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.7: Fires and Security Actions

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
1. Fire (within protected area) lasting more than 10 minutes: •Observation or fire detection alarm lasting > 10 minutes. 2. Security threat OR •Attempted entry OR •Attempted sabotage As reported by Security Force. END	1. Fire potentially affecting safety systems: •Observation of a fire that could affect safety systems. 2. Ongoing Security compromise: •As reported by Security Force END	1. Fire compromising the functions of safety systems: •Observation of a major fire that defeats redundant safety system or functions. 2. Imminent loss of physical control of the plant: •Physical attack on the plant including imminent occupancy of Control Room and auxiliary shutdown panels. END	1. Any major internal or external events (e.g., fires, earthquakes substantially beyond design levels) which could cause massive common damage to plant systems. 2. Loss of physical control of the facility: •Physical attack on the facility has resulted in occupation of the Control Room and auxiliary shutdown panels. END

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.8: Loss of Alarms and/or Communication

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
1. Indications or alarms on process or effluent parameters not functional in Control Room to an extent requiring plant shutdown or other significant loss of assessment or communication capability: SYMPTOMS •Loss of process or effluent Radiation monitoring system OR •Loss of all meteorological instrumentation onsite AND •Inability to call National Weather Service for back up source of meterorological data. OR •Loss of all radio/telephone communications capability. END	1. Most or all alarms (annunicators) lost. END	1. Most or all alarms (annunciators) lost for 15 minutes and plant is not in cold shutdown OR •Plant transient initiated while all alarms lost. END	N/A

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.9: Spent Fuel Damage

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
N/A	1. Fuel damage accident with release of radioactivity to Containment or Fuel Handling Building: SYMPTOMS •EMF-15, 17, 38, 39, 40 or 42 in alarm AND •Observation of damage to spent fuel assembly following an accident in fuel handling areas that, in the opinion of the Shift Supervisor, may have resulted in damaged spent fuel. END	1. Major damage to spent fuel in containment or Fuel Handling Building: SYMPTOMS •EMF-15, 17, 38, 39, 40 or 42 in alarm AND •Observation of major damage to spent fuel assemblies OR •Water level below fuel level following an accident in fuel handling areas that, in the opinion of the Shift Supervisor, may have resulted in damaged spent fuel. END	N/A

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.10: Natural Disasters and Other Hazards

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
1.a. Earthquake < OBE felt in plant or detected: < 0.08g Horizontal OR < 0.053g Vertical	1.a. Earthquake > OBE: > 0.08g Horizontal OR > 0.053g Vertical	1. When plant is not in cold shutdown: a. Earthquake > SSE: > 0.15g Horizontal OR > 0.10g Vertical	1. Any major internal or external events (e.g., fires, earthquakes substantially beyond design levels) which could cause massive common damage to plant systems. END
b. Lake level: High > 580 ft. to 592.2 ft. low 559.9 ft. to 550 ft.	b. Lake level: High 592 ft. 594.6 ft Low < 550 ft. with SNSWP available	b. Lake level: High > 594.6 ft. Low < 550 ft. AND Loss of SNSWP	
c. Any tornado on site	c. Any tornado striking facility	c. Sustained Winds > 95 mphs	
d. Sustained Winds > 73 mph	d. Sustained Winds approaching 95 mph	2. When plant is not in cold shutdown:	
2.a. Aircraft crash on-site or unusual aircraft activity over site	2.a Aircraft crash on facility affecting safe operation of plant	a. Aircraft crash causing damage or fire to Containment Building, Control Room, Auxiliary Building, Fuel Building or RN Intake Structure	
b. Train derailed onsite.	b. Missile impact on facility affecting safe operation of plant	b. Damage from missile or explosion causes inability to establish: 1) charging pump injection 2) CA flow 3) KC or RN flow	
c. Near site or onsite explosion	c. Explosion damage to facility affecting safe operation of plant	c. Entry of uncontrolled toxic or flammable gases into Control Room, Cable Spreading Room, Containment Building, Switchgear Room, Auxiliary Shutdown Panels or Diesel Rooms, affecting safe operation of plant.	
d. Near site or onsite toxic or flammable gas release	d. Uncontrolled entry of toxic or flammable gas into facility affecting safe operation of plant	END	
e. Turbine rotating component failure causes rapid plant shutdown	e. Turbine rotating component failure causing penetration of turbine casing.		
END	END		

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVEL'S FOR

EVENT # 4.1.11: Other Abnormal Plant Conditions

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
1. ECCS initiated: S/I signal verification by redundant indication and discharge into vessel.	1. Evacuation of Control Room anticipated or required with control of shutdown systems established from local station.	1. Evacuation of Control Room and control of shutdown systems not established from local stations in 15 minutes.	1. Other plant conditions exist, from whatever source, that in the judgement of the Shift Supervisor, the Operations Duty Engineer, the Superintendent of Operations or the Plant Manager make release of large amounts of radioactivity in a short time period possible (e.g., any core melt situation). END
2. Abnormal coolant temperature and/or pressure or abnormal Reactor fuel temperature: •Figure 2.1-1 Tech Specs exceeded. OR •Core Sub-cooling Monitor less than acceptable (Outside Acceptable Region)	2. Other plant conditions exist that in the judgement of the Shift Supervisor, the Operations Duty Engineer, the Superintendent of Operations, or the Plant Manager warrant precautionary activation of TSC & OSC. END	2. Other plant conditions exist that in the judgement of the Shift Supervisor, the Operations Duty Engineer, the Superintendent of Operations or the Plant Manager warrant activation of TSC & CMC and monitoring teams and a precautionary public notification. END	
3. Loss of containment integrity requiring shutdown by Tech. Spec: •Any automatic containment isolation valve found to be open and inoperable and unisolable. OR •Both air lock doors on a lock inoperable, or penetrations fail leak test per Tech Spec when containment integrity is required. CONTINUED			

CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVELS FOR

EVENT # 4.1.11: Other Abnormal Plant Conditions (Continued)

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
4. Loss of engineered safety feature or fire protection system function requiring shutdown by Technical Specifications: •ESF actuation system found inoperable. OR •Fire Protection Water System found inoperable per Tech Spec.			
5. Other plant conditions exist that in the judgement of the Shift Supervisor, the Operations Duty Engineer, the Superintendent of Operations or the Station Manager: •Warrant increased awareness of local authorities OR •Require plant shutdown under Tech Spec requirements AND •Involve other than normal controlled shutdown. END			

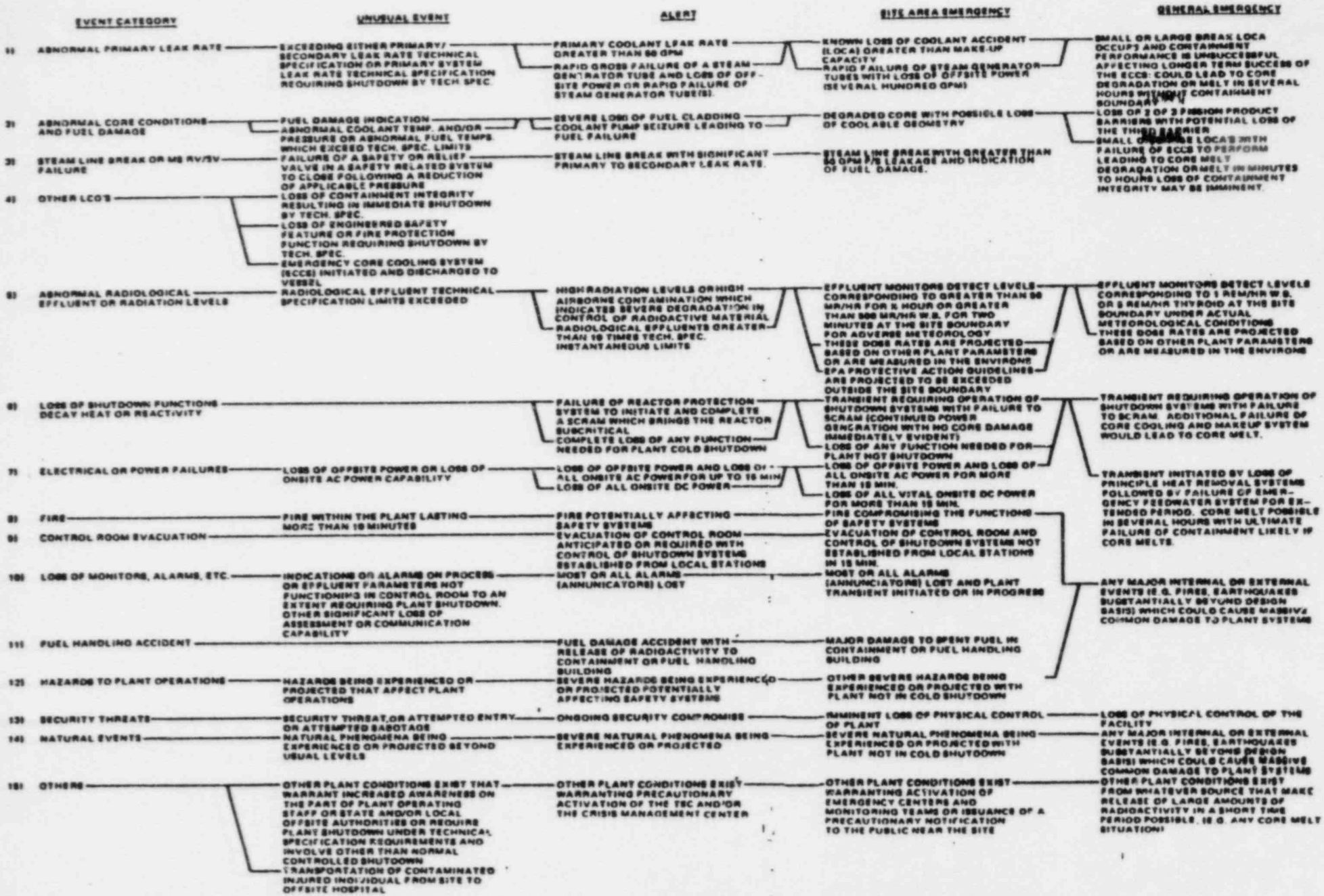
CATAWBA NUCLEAR STATION
EMERGENCY ACTION LEVELS FOR

EVENT # 4.1.12: Contaminated and Injured Individual

Class Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
1. Transportation of contaminated injured individual from site to offsite medical facility.	N/A	N/A	N/A

END

EMERGENCY CLASSIFICATION GUIDE FLOWCHART



Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/02
Change(s) 2 to
3 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: NOTIFICATION OF UNUSUAL EVENT

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter S. McKay DATE: 8/20/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
NOTIFICATION OF UNUSUAL EVENT

1.0 SYMPTOMS

1.1 This condition exists when events are in process or have occurred which indicate a potential degradation of the level of safety of the plant.

2.0 IMMEDIATE ACTIONS

2.1 Make initial notifications to individuals and organizations.

2.1.1 Complete Enclosure 4.2 and Part I of Warning Message Form. (See example Enclosure 4.3.) Record receivers name and time on Enclosure 4.2 and on Page 4 of Warning Message.

NOTE: Emergency Coordinator shall initial forms when message is approved for transmission.

NOTE: Warning Message Forms are kept in a notebook in the Control Room and TSC, ensure that all used forms are returned to the back of the notebook.

2.1.2 Notifications shall be as the order of Enclosure 4.1 indicates. See RP/0/B/5000/13 for NRC Notification.

NOTE: The State and County notification must be made within 15 minutes of declaration of the emergency.

3.0 SUBSEQUENT ACTIONS

3.1 Give follow-up messages to agencies listed in 4.1.3 of Enclosure 4.1, use the following schedule:

3.1.1 If the Unusual Event Situation lasts longer than one hour, then repeat each hour until closed out.

OR

If there is any significant change to the situation.

OR

As agreed upon with the individual agencies.

3.1.2 Use Parts I & II of Warning Message Form as applicable. Mark all spaces "N/A" when information is "Not Applicable" and mark "Later" when information is not currently available.

3.2 Augment shift resources to assess and respond to the emergency situation as needed.

3.3 Assess the emergency condition, then remain in a Notification of Unusual Event, escalate to a more severe class or terminate the emergency.

3.4 The Licensing and Projects Engineer or delegate shall close out the emergency with verbal summary to county and state authorities, notified in 4.1.3 of Enclosure 4.1, followed by written summary within 24 hours.

4.0 ENCLOSURES

4.1 Telephone Notification List

4.2 Emergency Message Format

4.3 Example Warning Message: Nuclear Facility to State/Local Government

TELEPHONE NOTIFICATION LIST

4.1.1 CNS Emergency Personnel — Initial

1. Operations Duty Engineer - Plant Page _____
   P & T Pager - [redacted]
   A: See Current Operations Work List for Home Phone Number.

2. Station Manager - J. W. Hampton _____
   Office [redacted]
   Home -

   1st Alternate - C. W. Graves _____
   Office
   Home

   2nd Alternate - J. W. Cox _____
   Office
   Home

   3rd Alternate - G. T. Smith _____
   Office
   Home

   4th Alternate - A. R. Franklin _____
   Office
   Home

3. License & Projects Engineer - C. L. Hartzell _____
   Office
   Home

   1st Alternate - M. E. Bolch _____
   Office
   Home

   2nd Alternate - P. G. LeRoy _____
   Office
   Home

4.1.2 Nuclear Production Duty Engineer _____
   P & T Page [redacted]
   ** USE ENCLOSURE 4.2 **

4.1.3 State & County Warning Points (Within 15 minutes)

1. N.C. State, Raleigh
   P: [redacted]
   A:
   *** USE ENCLOSURE 4.3 ***

2. S.C. State, Columbia
   P: [redacted]
   A:
   7:30 a.m. - 5:00 p.m. Weekdays
   After hours, Weekends & Holidays
   *** USE ENCLOSURE 4.3 ***

3. Mecklenburg County
   P: [redacted]
   A
   Back-up: Emergency Radio, Code:
   *** USE ENCLOSURE 4.3 ***

4. York County
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code:
   *** USE ENCLOSURE 4.3 ***

5. Gaston County
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code
   *** USE ENCLOSURE 4.3 ***

4.1.4 NRC Operations Center, Bethesda, Md. (RP/0/B/5000/13)
P: [redacted]
A:

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
TO NUCLEAR PRODUCTION DUTY ENGINEER
EMERGENCY MESSAGE FORMAT

1. This is _____ at Catawba Nuclear Station.
(Name and Title)

2. This ____ is ____ is not a drill. An __X__ Unusual Event
_____ Alert
_____ Site Area Emergency
_____ General Emergency

was declared by the Emergency Coordinator at _____ on Unit # ____.
(Time)

3. Initiating Condition: (Give as close to the emergency plan description as possible together with station parameters used to determine emergency status.)
_____
_____
_____
_____

4. Corrective measures being taken: _____
_____
_____
_____

5. There ____ have ____ have not not been any injuries to plant personnel.

6. Release of radioactivity: _____ is taking place
_____ is not taking place

7. NRC ____ Yes ____ No; State ____ Yes ____ No;
Counties ____ Yes ____ No; have been notified.

8. The Crisis Management Team _____ should ____ should not be activated. Corporate Communications and Company Management should be notified.

9. I can be reached at _____ for follow-up information.
(Telephone Number)

10. Additional Comments: _____
_____
_____
_____

Name of Person Contacted _____ Date _____ Time _____

EXAMPLE

WARNING MESSAGE: NUCLEAR FACILITY TO STATE/LOCAL GOVERNMENT

Instructions:

A. For Sender:

1. Complete Part I for the Initial Warning Message.

2. Complete Parts I & II for follow-up messages.

B. For Receiver:

1. Record the date, time and your name in the area below.

2. Authenticate this message by verifying the code word or by calling back to the facility. (See Part I.5)

Time: _____ Date: _____
Message Received By: _____

PART I

1. This is: Catawba Nuclear Station

2. My name is: John Doe, Shift Supervisor

3. This message (number 1):

X (a) Reports a real emergency.

_____ (b) Is an exercise message.

4. My telephone number/extension is: [redacted]

5. Message authentication: USE MESSAGE AUTHENTICATION LIST
(Verify code word or call back to facility)

6. The class of the emergency is: X (a) Notification of Unusual Event

_____ (b) Alert

_____ (c) Site Emergency

_____ (d) General Emergency

7. This classification of emergency was declared at: _____ (a.m./p.m.) on _____ (date).

8. The initiating event causing the emergency classification is: Loss of Offsite Power

9. The emergency condition: X (a) Does not involve the release of radioactive materials from the plant.

_____ (b) Involves the potential for a release, but no release is occurring.

_____ (c) Involves a release of radioactive material.

10. We recommend the following protective action:

X (a) No protective action is recommended at this time.

_____ (b) People living in zones _____ remain indoors with the doors and windows closed.

_____ (c) People in zones _____ evacuate their homes and businesses.

_____ (d) Pregnant women and children in zones _____ remain indoors with the doors and windows closed.

_____ (e) Pregnant women and children in zones _____ evacuate to the nearest shelter/reception center.

_____ (f) Other recommendations: _____

_____

11. There will be:

_____ (a) A followup message

X (b) No further communications

Approved for Release

12. I repeat, this message:

_____
Emerg. Coord. Time

X (a) Reports an actual emergency

_____ (b) Is an exercise message

13. RELAY THIS INFORMATION TO THE PERSONS INDICATED ON YOUR ALERT PROCEDURE FOR AN INCIDENT AT A NUCLEAR FACILITY.

END OF INITIAL WARNING MESSAGE

PART II

1. The type of actual or projected release is: N/A

_____ (a) Airborne

_____ (b) Waterborne

_____ (c) Surface spill

_____ (d) Other

2. The source and description of the release is: N/A

_____

3. N/A (a) Release began/will begin at _____ a.m./p.m.; time since reactor trip is _____ hours.

N/A (b) The estimated duration of the release is _____ hours.

4. **Dose projection base data:**

Radiological release: N/A curies, or _____ curies/sec.

Windspeed: 5 mph

Wind direction: From 180 °

Stability class: D (A,B,C,D,E,F, or G)

Release height: N/A Ft.

Dose conversion factor: N/A R/hr/Ci/m³ (whole body)

N/A R/hr/Ci/m³ (Child Thyroid)

Precipitation: 0

Temperature at the site: 72 °F

5. **Dose projections:** N/A

Dose Commitment

Distance	Whole Body Rem/hour	(Child Thyroid) Rem/hour of inhalation
Site boundary		
2 miles		
5 miles		
10 miles		

Projected Integrated Dose in Rem

Distance	Whole Body	Child Thyroid
Site boundary		
2 miles		
5 miles		
10 miles		

6. **Field measurement of dose rate or contamination (if available):** N/A

7. **Emergency actions underway at the facility include:** N/A

8. **Onsite support needed from offsite organizations:** NONE

9. **Plant status:**

(a) Reactor is: not tripped/tripped

(b) Plant is at: 100 % power/hot shutdown/cold shutdown/cooling down

(c) Prognosis is: stable/improving/degrading/unknown

10. I repeat, this message:

__X__ (a) Reports an actual emergency.

_____ (b) [redacted] is an exercise message.

Approved for Release

_____
Emerg. Coord. Time

11. Do you have any questions?

END OF FOLLOW-UP MESSAGE

NOTE: Record the name, title, date, time, and warning point notified. (Senders)

Record the name, title, date, time, and persons notified per alert procedure. (Receivers)

1. _____
(name) (title)

_____
(date) (time) (warning point)

2. _____
(name) (title)

_____
(date) (time) (warning point)

3. _____
(name) (title)

_____
(date) (time) (warning point)

4. _____
(name) (title)

_____
(date) (time) (warning point)

5. _____
(name) (title)

_____
(date) (time) (warning point)

6. _____
(name) (title)

_____
(date) (time) (warning point)

7. _____
(name) (title)

_____
(date) (time) (warning point)

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/03
Change(s) 2 to
3 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: ALERT

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter H. Teskey DATE: 8/20/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
ALERT

1.0 SYMPTOMS

1.1 Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant.

2.0 IMMEDIATE ACTIONS

2.1 Make initial notifications to individuals and organizations.

2.1.1 Complete Enclosure 4.2 and Part I of Warning Message Form (see example Enclosure 4.3). Record receiver's name and time on Enclosure 4.2 and on page 4 of Warning Message.

NOTE: Emergency Coordinator shall initial forms when message is approved for transmission.

NOTE: Warning Message forms are kept in a Notebook in the Control Room and TSC, ensure that all used forms are returned to the back of the notebook.

2.1.2 Notifications shall be as the order of Enclosure 4.1 indicates. See RP/0/B/5000/13 for NRC Notification.

NOTE: **The State and County notification must be made within 15 minutes of declaration of the emergency.**

2.1.3 Advise station personnel to activate TSC and OSC.

3.0 SUBSEQUENT ACTIONS

3.1 Accident Assessment:

3.1.1 Dispatch on site monitoring teams with associated communications equipment, see HP/0/B/1009/09.

3.2 Give Follow-up Messages to offsite agencies listed on 4.1.3 of Enclosure 4.1, use the following schedule:

3.2.1 Every half hour until the emergency is closed out.

or

If there is any significant change to the situation.

or

As agreed upon with the individual agencies.

3.2.2 Use parts 1 & 11 of Warning Message Form as applicable. Mark all spaces "N/A" when information is "Not Applicable" and mark "Later" when information is not currently available.

3.3 Recommend Protective Action Offsite

NOTE

Protective Action Recommendations are obtained from: OAC Program "Nuclear-23" or RP/0/A/5000/11, if the OAC is not operational, for Operations Personnel.

3.4 If the emergency situation is rapidly degrading then conduct a Site Assembly, see RP/0/A/5000/10.

3.5 Augment shift resources to assess and respond to the emergency situation as needed.

3.6 Assess the emergency condition, then remain in an Alert, escalate to a more severe class, reduce the Emergency Class or close out the emergency.

3.7 The Licensing and Projects Engineer or delegate shall close out the emergency with verbal summary to county and state authorities, notified in 4.1.3 of Enclosure 4.1, followed by written summary within 8 hours.

4.0 ENCLOSURES

4.1 Telephone Notification List

4.2 Emergency Message Format

4.3 Example Warning Message: Nuclear Facility to State/Local Government

TELEPHONE NOTIFICATION LIST

4.1.1 CNS Emergency Personnel — Initial

1. Operations Duty Engineer - Plant Page _____
   P & T Pager [redacted]
   A: See Current Operations Work List for Home Phone Number.

2. Station Manager - J. W. Hampton _____
   Office [redacted]
   Home -

   1st Alternate - C. W. Graves _____
   Office [redacted]
   Home

   2nd Alternate - J. W. Cox _____
   Office [redacted]
   Home

   3rd Alternate - G. T. Smith _____
   Office [redacted]
   Home

   4th Alternate - A. R. Franklin _____
   Office [redacted]
   Home

3. Licensing & Projects Engineer - C. L. Hartzell _____
   Office [redacted]
   Home

   1st Alternate - M. E. Bolch _____
   Office [redacted]
   Home

   2nd Alternate - P. G. LeRoy _____
   Office [redacted]
   Home

4.1.2 Nuclear Production Duty Engineer _____
   P & T Page [redacted]
   ** USE ENCLOSURE 4.2 **

4.1.3 State & County Warning Points (Within 15 minutes)

1. N.C. State, Raleigh
   P: [redacted]
   A:
   *** USE ENCLOSURE 4.3 ***

2. S.C. State ,Columbia
   P: [redacted] 7:30 a.m. - 5:00 p.m. Weekdays
   A: After hours, Weekends & Holidays
   *** USE ENCLOSURE 4.3 ***

3. Mecklenburg County
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code:
   *** USE ENCLOSURE 4.3 ***

4. York County
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code
   *** USE ENCLOSURE 4.3 ***

5. Gaston County
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code:
   *** USE ENCLOSURE 4.3 ***

4.1.4 NRC Operations Center, Bethesda Md. (RP/0/B/5000/13)
P: ENS phone (red phone)
A: [redacted]

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
TO NUCLEAR PRODUCTION DUTY ENGINEER
EMERGENCY MESSAGE FORMAT

1. This is _____ at Catawba Nuclear Station.
(Name and Title)

2. This ____ is ____ is not a drill. An
_____ Unusual Event
__X__ Alert
_____ Site Area Emergency
_____ General Emergency
was declared by the Emergency Coordinator at _____ on Unit # ____.
(Time)

3. Initiating Condition: (Give as close to the emergency plan description as possible together with station parameters used to determine emergency status.)
_____
_____
_____
_____

4. Corrective measures being taken: _____
_____
_____
_____

5. There ____ have ____ have not not been any injuries to plant personnel.

6. Release of radioactivity:
_____ is taking place
_____ is not taking place

7. NRC ____ Yes ____ No; State ____ Yes ____ No;
Counties ____ Yes ____ No; have been notified.

8. The Crisis Management Team _____ should ____ should not be activated.
Corporate Communications and Company Management should be notified.

9. I can be reached at _____ for follow-up information.
(Telephone Number)

10. Additional Comments: _____
_____
_____
_____

Name of Person Contacted _____ Date _____ Time _____

EXAMPLE

WARNING MESSAGE: NUCLEAR FACILITY TO STATE/LOCAL GOVERNMENT

Instructions:

A. For Sender:

1. Complete Part I for the Initial Warning Message.

2. Complete Parts I & II for followup messages.

B. For Receiver:

1. Record the date, time and your name in the area below.

2. Authenticate this message by verifying the code word or by calling back to the facility. (See Part I.5)

Time: _____ Date: _____
Message Received By: _____

PART I

1. This is: Catawba Nuclear Station

2. My name is: John Doe, Shift Supervisor

3. This message (number 1):

X (a) Reports a real emergency.
_____ (b) Is an exercise message.

4. My telephone number/extension is: [redacted]

5. Message authentication: USE MESSAGE AUTHENTICATION LIST
(Verify code word or call back to facility)

6. The class of the emergency is:
_____ (a) Notification of Unusual Event
X (b) Alert
_____ (c) Site Emergency
_____ (d) General Emergency

7. This classification of emergency was declared at: _____(a.m./p.m.) on _____(date).

8. The initiating event causing the emergency classification is: Fire potentially affecting safety system

9. The emergency condition:
X (a) Does not involve the release of radioactive materials from the plant.
_____ (b) Involves the potential for a release, but no release is occurring.
_____ (c) Involves a release of radioactive material.

10. We recommend the following protective action:

___X___(a) No protective action is recommended at this time.

_____(b) People living in zones _____ remain indoors with the doors and windows closed.

_____(c) People in zones _____ evacuate their homes and businesses.

_____(d) Pregnant women and children in zones _____ remain indoors with the doors and windows closed.

_____(e) Pregnant women and children in zones _____ evacuate to the nearest shelter/reception center.

_____(f) Other recommendations: _____

_____

11. There will be:

___X___(a) A followup message

_____(b) No further communications

12. I repeat, this message: APPROVED FOR RELEASE

___X___(a) Reports an actual emergency _____ (Emerg. Coord. Time.)

_____(b) Is an exercise message

13. RELAY THIS INFORMATION TO THE PERSONS INDICATED ON YOUR ALERT PROCEDURE FOR AN INCIDENT AT A NUCLEAR FACILITY.

END OF INITIAL WARNING MESSAGE

PART II

1. The type of actual or projected release is: N/A

_____(a) Airborne

_____(b) Waterborne

_____(c) Surface spill

_____(d) Other

2. The source and description of the release is: ___N/A___

_____

3. ___N/A___(a) Release began/will begin at _____a.m./p.m.; time since reactor trip is _____ hours.

___N/A___(b) The estimated duration of the release is _____ hours.

4. **Dose projection base data:**

Radiological release: N/A curies, or _____ curies/sec.

Windspeed: 5 mph

Wind direction: From 180°

Stability class: D (A,B,C,D,E,F, or G)

Release height: N/A Ft.

Dose conversion factor: N/A R/hr/Ci/m³ (whole body)
N/A R/hr/Ci/m³ (Child Thyroid)

Precipitation: 0

Temperature at the site: 72°F

5. **Dose projections:** N/A

Dose Commitment

Distance	Whole Body Rem/hour	(Child Thyroid) Rem/hour of inhalation
Site boundary		
2 miles		
5 miles		
10 miles		

Projected Integrated Dose in Rem

Distance	Whole Body	Child Thyroid
Site boundary		
2 miles		
5 miles		
10 miles		

6. **Field measurement of dose rate or contamination (if available):** N/A

7. **Emergency actions underway at the facility include:** Extinguised the fire

8. **Onsite support needed from offsite organizations:** None

9. **Plant status:**

(a) Reactor is: not tripped/tripped

(b) Plant is at: 100% power/hot shutdown/cold shutdown/cooling down

(c) Prognosis is: stable/improving/degrading/unknown

10. I repeat, this message:

APPROVED FOR RELEASE

__X__ (a) Reports an actual emergency. _____ (Emerg. Coord. Time)

_____ (b) Is an exercise message.

11. Do you have any questions?

END OF FOLLOW-UP MESSAGE

NOTE: Record the name, title, date, time, and warning point notified. (Senders)

Record the name, title, date, time, and persons notified per alert procedure. (Receivers)

1. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

2. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

3. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

4. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

5. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

6. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

7. _____ (name) _____ (title)

_____ (date) _____ (time) _____ (warning point)

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/04
Change(s) 2 to
3 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: SITE AREA EMERGENCY

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter K. Tefay DATE: 8/20/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
SITE AREA EMERGENCY

1.0 SYMPTOMS

1.1 Events are in process or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public.

2.0 IMMEDIATE ACTIONS

2.1 Make initial notifications to individuals and organizations.

2.1.1 Complete Enclosure 4.2 and Part I of Warning Message Form (see Example Enclosure 4.3). Record receiver's name and time on Enclosure 4.2 and on Page 4 of Warning Message.

NOTE: Emergency Coordinator shall initial forms when message is approved for transmission.

NOTE: Warning Message forms are kept in a notebook in the Control Room and TSC, ensure that all used forms are returned to the back of the notebook.

2.1.2 Notifications shall be as the order of Enclosure 4.1 indicates. See RP/0/B/5000/13 for NRC Notification.

NOTE: The State and County notification must be made within 15 minutes of declaration of the emergency.

2.1.3 Advise station personnel to activate TSC and OSC.

2.1.4 Advise the Nuclear Production Duty Engineer to activate the CMC.

2.2 Protective Action Offsite

2.2.1 Recommend to Offsite Agencies that the Alerting Sirens be sounded and that the EBS be activated to inform the public of a potential for later protective actions.

2.3 Protective Action Onsite

2.3.1 Conduct a Site Assembly, see RP/0/A/5000/10.

3.0 SUBSEQUENT ACTIONS

3.1 Accident Assessment:

3.1.1 Dispatch field monitoring teams with associated communications equipment, see HP/0/B/1009/04.

3.2 Give follow-up message to offsite agencies listed on 4.1.3 of Enclosure 4.1, use the following schedule:

3.2.1 Every half hour until the emergency is closed out.

or

If there is any significant change to the situation.

or

As agreed upon with the individual agencies.

3.2.2 Use Parts I & II of Warning Message Form as applicable. Mark all spaces "N/A" when information is "Not Applicable" and mark "Later" when information is not currently available.

3.3 Follow-up Recommend Protective Action Offsite

NOTE

Protective Action Recommendations are obtained from: OAC Program "Nuclear-23" or RP/0/A/5000/11, if the OAC is not available, for Operations personnel.

3.3.1 The Emergency Coordinator shall make Protective Action Recommendations to the affected county warning points and to both SC and NC state warning points (Emergency Operations Center if established) or the designated state department as per the state's Radiological Emergency Response Plan. See Enclosure 4.4 for aid in protective action decision making.

NOTE

This authority shall not be delegated to other elements of the emergency organization.

3.3.2 If actual release of radioactive material will result in a projected dose to the population of:

Whole Body	Thyroid	Recommendation
<1 Rem	<5 Rem	No Protective Action is Required.
1 to <5 Rem	5 to <25 Rem	Recommend seeking shelter and wait for further instruction. Consider evacuation particularly for children & pregnant women. Control access to affected areas.
> 5 Rem	> 25 Rem	Recommend mandatory evacuation of population in the affected areas. Control access to affected areas.

NOTE

Monitor environmental radiation levels to verify and adjust recommendations as necessary.

3.4 Follow-up Protective Actions On-site.

3.4.1 Consider evacuation of non-essential station personnel, see RP/0/A/5000/10.

3.5 Augment shift resources to assess and respond to the emergency situation as needed.

3.6 Assess the emergency condition, then remain in a Site Area Emergency, escalate to a more severe class, reduce the emergency class, or terminate the emergency.

3.7 The Recovery Manager at the Crisis Management Center shall close out or recommend reduction of the emergency class, by briefing of offsite authorities at the Crisis Management Center or by phone if necessary, followed by written summary within 8 hours.

4.0 ENCLOSURES

4.1 Telephone Notification List

4.2 Emergency Message Format

4.3 Example Warning Message: Nuclear Facility to State/Local Government

4.4 Protective Action Recommendation Flow Chart

4.5 10 Mile Emergency Planning Zone (EPZ) Map

TELEPHONE NOTIFICATION LIST

4.1.1 CNS Emergency Personnel — Initial

1. Operations Duty Engineer - Plant Page _____
   P & T Pager [redacted]
   A: See Current Operations Work List for Home Phone Number.

2. Station Manager - J. W. Hampton _____
   Office [redacted]
   Home -

   1st Alternate - C. W. Graves _____
   Office [redacted]
   Home

   2nd Alternate - J. W. Cox _____
   Office [redacted]
   Home

   3rd Alternate - G. T. Smith _____
   Office [redacted]
   Home

   4th Alternate - A. R. Franklin _____
   Office [redacted]
   Home

3. License & Projects Engineer - C. L. Hartzell _____
   Office [redacted]
   Home

   1st Alternate - M. E. Bolch _____
   Office [redacted]
   Home

   2nd Alternate - P. G. LeRoy _____
   Office [redacted]
   Home

4.1.2 Nuclear Production Duty Engineer _____
   P & T Page [redacted]
   *** USE ENCLOSURE 4.2 ***

4.1.3 State & County Warning Points (Within 15 minutes) _____

1. N.C. State, Raleigh _____
   P: [redacted]
   A:
   *** USE ENCLOSURE 4.3 ***

2. S.C. State, Columbia _____
   P: [redacted] 7:30 a.m. - 5:00 p.m. Weekdays
   A: Afterhours, Week-ends & Holidays
   *** USE ENCLOSURE 4.3 ***

3. Mecklenburg County _____
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code:
   *** USE ENCLOSURE 4.3 ***

4. York County _____
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code:
   *** USE ENCLOSURE 4.3 ***

5. Gaston County _____
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code
   *** USE ENCLOSURE 4.3 ***

4.1.4 NRC Operations Center, Bethesda Md. (RP/0/B/5000/13) _____
P: ENS phone (red phone)
A: [redacted]

WARNING MESSAGE: NUCLEAR FACILITY TO STATE/LOCAL GOVERNMENT

Instructions:

A. For Sender:

1. Complete Part I for the Initial Warning Message.

2. Complete Parts I & II for followup messages.

B. For Receiver:

1. Record the date, time and your name in the area below.

2. Authenticate this message by verifying the code word or by calling back to the facility. (See Part I.5)

Time: _____ Date: _____
Message Received By: _____

PART I

1. This is: Catawba Nuclear Station

2. My name is: _____

3. This message (number ___):

_____ (a) Reports a real emergency.

_____ (b) Is an exercise message.

4. My telephone number/extension is: _____

5. Message authentication: USE MESSAGE AUTHENTICATION LIST
(Verify code word or call back to facility)

6. The class of the emergency is:
_____(a) Notification of Unusual Event
_____(b) Alert
__X__(c) Site Emergency
_____(d) General Emergency

7. This classification of emergency was declared at: _____(a.m./p.m.) on _____(date).

8. The initiating event causing the emergency classification is: _____
_____
_____

9. The emergency condition:
_____(a) Does not involve the release of radioactive materials from the plant.
_____(b) Involves the potential for a release, but no release is occurring.
_____(c) Involves a release of radioactive material.

EXAMPLE

WARNING MESSAGE: NUCLEAR FACILITY TO STATE/LOCAL GOVERNMENT

Instructions:

A. For Sender:

1. Complete Part I for the Initial Warning Message.

2. Complete Parts I & II for followup messages.

B. For Receiver:

1. Record the date, time and your name in the area below.

2. Authenticate this message by verifying the code word or by calling back to the facility. (See Part I.5)

Time: _____ Date: _____
Message Received By: _____

PART I

1. This is: Catawba Nuclear Station

2. My name is: John Doe, Shift Supervisor

3. This message (number 1):

X (a) Reports a real emergency.
_____ (b) Is an exercise message.

4. My telephone number/extension is: [redacted]

5. Message authentication: USE MESSAGE AUTHENTICATION LIST
(Verify code word or call back to facility)

6. The class of the emergency is:
_____ (a) Notification of Unusual Event
_____ (b) Alert
X (c) Site Emergency
_____ (d) General Emergency

7. This classification of emergency was declared at: _____ (a.m./p.m.) on _____ (date).

8. The initiating event causing the emergency classification is: Transient requiring operation of shutdown system with failure to trip.

9. The emergency condition:
X (a) Does not involve the release of radioactive materials from the plant.
_____ (b) Involves the potential for a release, but no release is occurring.
_____ (c) Involves a release of radioactive material.

10. We recommend the following protective action:

_____(a) No protective action is recommended at this time.

_____(b) People living in zones _____ remain indoors with the doors and windows closed.

_____(c) People in zones _____ evacuate their homes and businesses.

_____(d) Pregnant women and children in zones _____ remain indoors with the doors and windows closed.

_____(e) Pregnant women and children in zones _____ evacuate to the nearest shelter/reception center.

__X__(f) Other recommendations: Activate offsite notification system & EBS to inform public

11. There will be:

__X__(a) A follow-up message

_____(b) No further communications

Approved for Release

_____
Emerg. Coord. Time

12. I repeat, this message:

_____(a) Reports an actual emergency

_____(b) Is an exercise message

13. RELAY THIS INFORMATION TO THE PERSONS INDICATED ON YOUR ALERT PROCEDURE FOR AN INCIDENT AT A NUCLEAR FACILITY.

END OF INITIAL WARNING MESSAGE

PART II

1. The type of actual or projected release is: N/A

_____(a) Airborne

_____(b) Waterborne

_____(c) Surface spill

_____(d) Other

2. The source and description of the release is: N/A

3. N/A (a) Release began/will begin at _____ a.m./p.m.; time since reactor trip is 1/2 hours.

N/A (b) The estimated duration of the release is _____ hours.

4. **Dose projection base data:**

Radiological release: N/A curies, or _____ curies/sec.

Windspeed: 5 mph

Wind direction: From 180°

Stability class: D (A,B,C,D,E,F, or G)

Release height: N/A Ft.

Dose conversion factor: N/A R/hr/Ci/m³ (whole body)
N/A R/hr/Ci/m³ (Child Thyroid)

Precipitation: 0

Temperature at the site: 72°F

5. **Dose projections:** N/A

Dose Commitment

Distance	Whole Body Rem/hour	(Child Thyroid) Rem/hour of inhalation
Site boundary		
2 miles		
5 miles		
10 miles		

Projected Integrated Dose in Rem

Distance	Whole Body	Child Thyroid
Site boundary		
2 miles		
5 miles		
10 miles		

6. **Field measurement of dose rate or contamination (if available):** Later

7. **Emergency actions underway at the facility include:** Replacing breaker

8. **Onsite support needed from offsite organizations:** None

9. **Plant status:**

(a) Reactor is: not tripped/tripped

(b) Plant is at: 0 % power/hot shutdown/cold shutdown/cooling down

(c) Prognosis is: stable/improving/degrading/unknown

10. I repeat, this message:

Approved for Release

___X___(a) Reports an actual emergency.

_____(b) [redacted]s an exercise message.

_____
Emerg. Coord. Time

11. Do you have any questions?

END OF FOLLOW-UP MESSAGE

NOTE: Record the name, title, date, time, and warning point notified. (Senders)

Record the name, title, date, time, and persons notified per alert procedure. (Receivers)

1. _____
(name) (title)

_____
(date) (time) (warning point)

2. _____
(name) (title)

_____
(date) (time) (warning point)

3. _____
(name) (title)

_____
(date) (time) (warning point)

4. _____
(name) (title)

_____
(date) (time) (warning point)

5. _____
(name) (title)

_____
(date) (time) (warning point)

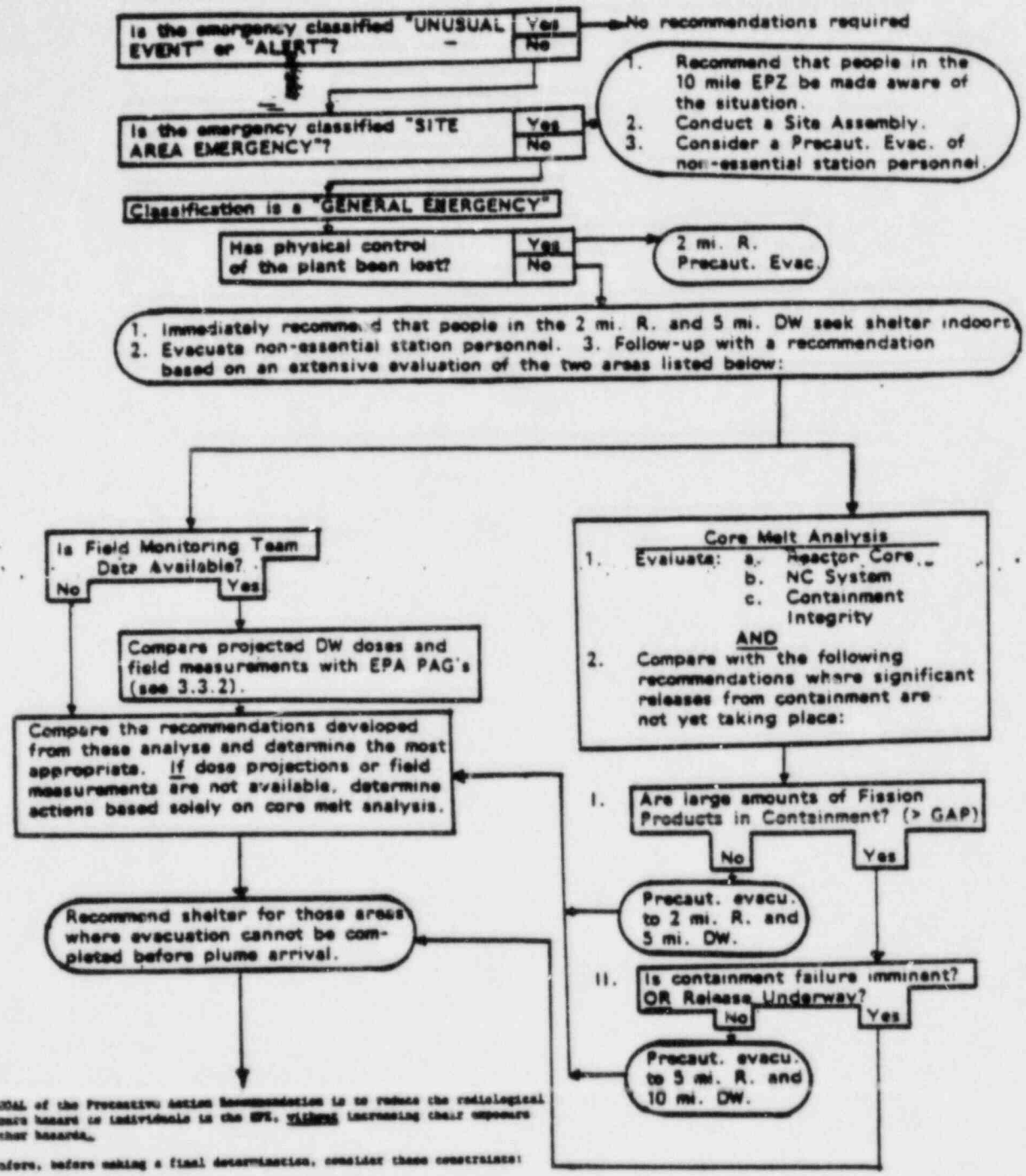
6. _____
(name) (title)

_____
(date) (time) (warning point)

7. _____
(name) (title)

_____
(date) (time) (warning point)

ENCLOSURE 4.4
PROTECTIVE ACTION RECOMMENDATION
FLOW CHART



The GOAL of the Protective Action Recommendation is to reduce the radiological exposure hazard to individuals in the EPZ, without increasing their exposure to other hazards.

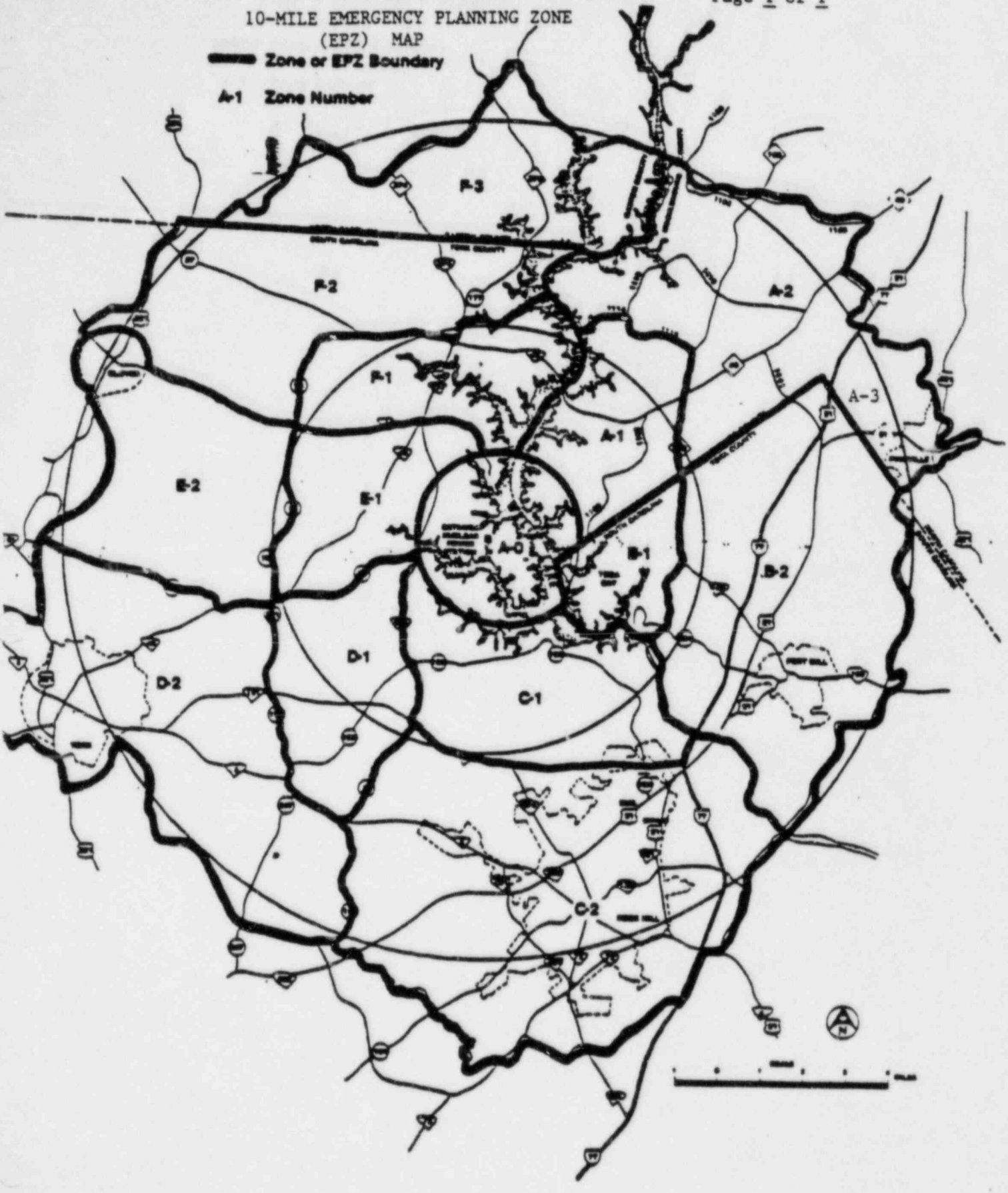
Therefore, before making a final determination, consider these constraints:

1. Do not evacuate the public if evacuation cannot be completed before estimated plume arrival. (Compare evacuation time estimate versus estimated plume arrival time.)
2. Concentrate on evacuation of areas nearest the plant.
3. Do bridge and road conditions present an impediment to evacuation?
4. Will weather conditions inhibit evacuation?
5. Can State/County agencies support the recommendation?
6. Is this a "Puff" or continuous release?
7. For any evacuation, recommend sheltering for the population in the plume exposure EPZ not evacuated.
8. Promptly reassess the population affected by any ground contamination following plume passage.

Abbreviations
DW - Downwind
R - Radius

CATAWBA NUCLEAR STATION

10-MILE EMERGENCY PLANNING ZONE
(EPZ) MAP



Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/05
Change(s) 2 to
3 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: GENERAL EMERGENCY

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter G. LeRoy DATE: 8/20/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
GENERAL EMERGENCY

1.0 SYMPTOMS

1.1 Events are in process or have occurred which involve an actual or imminent substantial core degradation or melting with potential for loss of containment integrity.

2.0 IMMEDIATE ACTIONS

2.1 Make initial notifications to individuals and organizations.

2.1.1 Complete Enclosure 4.2 and Part I of Warning Message Form (see example Enclosure 4.3). Record receiver's name and time on Enclosure 4.2 and on Page 4 of Warning Message.

NOTE: Emergency Coordinator shall initial forms when message is approved for transmission.

NOTE: Warning Message forms are kept in a notebook in the Control Room and TSC, ensure that all used forms are returned to the back of the notebook.

2.1.2 Notifications shall be as the order of Enclosure 4.1 indicates. See RP/0/B/5000/13 for NRC Notification.

NOTE: **The State and County notification must be made within 15 minutes of declaration of the emergency.**

2.1.3 Advise station personnel to activate TSC and OSC.

2.1.4 Advise the Nuclear Production Duty Engineer to activate the CMC.

2.2 Protective Actions Offsite

2.2.1 Recommend to Offsite Agencies that all residents of the 2 mile radius zone (A-O) and any zone 5 miles downwind of the plant seek immediate shelter and await futher instructions.

2.3 Protective Action Onsite

2.3.1 Conduct a Site Assembly, see RP/0/A/5000/10.

2.3.2 Evacuate non-essential personnel to the Evacuation Relocation Centers, see RP/0/A/5000/10.

3.0 SUBSEQUENT ACTIONS

3.1 Accident Assessment:

3.1.1 Dispatch field monitoring teams with associated communications equipment, see HP/0/B/1009/04.

3.2 Give follow-up messages to offsite agencies listed on 4.1.3 of Enclosure 4.1, use the following schedule:

3.2.1 Every half hour until the emergency is closed out.

or

If there is any significant change to the situation.

or

As agreed upon with the individual agencies.

3.2.2 Use Parts I & II of Warning Message Form as applicable. Mark all spaces "N/A" when information is "Not Applicable" and mark "Later" when information is not currently available.

3.3 Follow-up Recommend Protective Action Offsite

NOTE

Protective Action Recommendation are obtained from: OAC Program "Nuclear-23" or RP/0/A/5000/11, if the OAC is not operational, for Operations personnel.

3.3.1 The Emergency Coordinator shall make Protective Action Recommendations to the affected county warning points and to both SC and NC state warning points (Emergency Operations Center if established) or the designated state department as per the state's Radiological Emergency Response Plan. See Enclosure 4.4 for aid in protective action decision making.

NOTE

This authority shall not be delegated to other elements of the emergency organization.

3.3.2 If actual release of radioactive material will result in a projected dose to the population of:

Whole Body	Thyroid	Recommendation
<1 Rem	<5 Rem	No Protective Action is Required.
1 to <5 Rem	5 to <25 Rem	Recommend seeking shelter and wait for further instruction. Consider evacuation particularly for children & pregnant women. Control access to affected areas.
>5 Rem	>25 Rem	Recommend mandatory evacuation of population in the affected areas. Control access to affected areas.

NOTE

Monitor environmental radiation levels to verify and adjust recommendations as necessary.

3.4 Augment on shift resources to assess and respond to the emergency situation as needed.

3.5 Assess the emergency condition, then remain in an General Emergency, reduce the emergency class or close out the emergency.

3.6 The Recovery Manager at the Crisis Management Center shall close out the emergency or recommend reduction of the emergency class by briefing the offsite authorities at the Crisis Management Center or by phone if necessary, followed by written summary within 8 hours.

4.0 ENCLOSURES

4.1 Telephone Notification List

4.2 Emergency Message Format

4.3 Example Warning Message: Nuclear Facility to State/Local Government

4.4 Protective Action Recommendation Flow Chart

4.5 10 Mile Emergency Planning Zone (EPZ) Map

TELEPHONE NOTIFICATION LIST

4.1.1 CNS Emergency Personnel — Initial

1. Operations Duty Engineer - Plant Page _____
   P & T Pager [redacted]
   A: See Current Operations Work List for Home Phone Number.

2. Station Manager - J. W. Hampton _____
   Office [redacted]
   Home [redacted]

   1st Alternate - C. W. Graves _____
   Office [redacted]
   Home [redacted]

   2nd Alternate - J. W. Cox _____
   Office [redacted]
   Home [redacted]

   3rd Alternate - G. T. Smith _____
   Office [redacted]
   Home [redacted]

   4th Alternate - A. R. Franklin _____
   Office [redacted]
   Home [redacted]

3. Licensing & Projects Engineer - C. L. Hartzell _____
   Office [redacted]
   Home [redacted]

   1st Alternate - M. E. Bolch _____
   Office [redacted]
   Home [redacted]

   2nd Alternate - P. G. LeRoy _____
   Office [redacted]
   Home [redacted]

4.1.2 Nuclear Production Duty Engineer [redacted] _____
   P & T Page [redacted]
   ** USE ENCLOSURE 4.2 **

4.1.3 State & County Warning Points (Within 15 minutes)

1. N.C. State, Raleigh
   P: [redacted]
   A:
   *** USE ENCLOSURE 4.3 ***

2. S.C. State, Columbia
   P: [redacted] 7:30 a.m. - 5:00 p.m. Weekdays
   A: After hours, Weekends & Holidays
   *** USE ENCLOSURE 4.3 ***

3. Mecklenburg County
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code:
   *** USE ENCLOSURE 4.3 ***

4. York County
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code:
   *** USE ENCLOSURE 4.3 ***

5. Gaston County
   P: [redacted]
   A:
   Back-up: Emergency Radio, Code:
   *** USE ENCLOSURE 4.3 ***

4.1.4 NRC Operations Center, Bethesda Md. (RP/0/B/5000/13)
   P: ENS phone (red phone)
   A: [redacted]

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
TO NUCLEAR PRODUCTION DUTY ENGINEER
EMERGENCY MESSAGE FORMAT

1. This is _____ at Catawba Nuclear Station.
(Name and Title)

2. This ____ is ____ is not a drill. An _____ Unusual Event
_____ Alert
_____ Site Area Emergency
__X__ General Emergency

was declared by the Emergency Coordinator at _____ on Unit # ____.
(Time)

3. Initiating Condition: (Give as close to the emergency plan description as possible together with station parameters used to determine emergency status.)
_____
_____
_____
_____

4. Corrective measures being taken: _____
_____
_____
_____

5. There ____ have _____ have not not been any injuries to plant personnel.

6. Release of radioactivity: _____ is taking place
_____ is not taking place

7. NRC ____ Yes ____ No; State ____ Yes ____ No;
Counties ____ Yes ____ No; have been notified.

8. The Crisis Management Team _____ should ____ should not be activated. Corporate Communications and Company Management should be notified.

9. I can be reached at _____ for follow-up information.
(Telephone Number)

10. Additional Comments: _____
_____
_____
_____

Name of Person Contacted _____ Date _____ Time _____

EXAMPLE

WARNING MESSAGE: NUCLEAR FACILITY TO STATE/LOCAL GOVERNMENT

Instructions:

A. For Sender:

1. Complete Part I for the Initial Warning Message.

2. Complete Parts I & II for followup messages.

B. For Receiver:

1. Record the date, time and your name in the area below.

2. Authenticate this message by verifying the code word or by calling back to the facility. (See Part I.5)

Time: _____ Date: _____
Message Received By: _____

PART I

1. This is: Catawba Nuclear Station

2. My name is: John Doe, Shift Supervisor

3. This message (number 1):

X (a) Reports a real emergency.
_____ (b) Is an exercise message.

4. My telephone number/extension is: [redacted]

5. Message authentication: USE MESSAGE AUTHENTICATION LIST
(Verify code word or call back to facility)

6. The class of the emergency is:
_____(a) Notification of Unusual Event
_____(b) Alert
_____(c) Site Emergency
X (d) General Emergency

7. This classification of emergency was declared at: _____(a.m./p.m.) on _____(date).

8. The initiating event causing the emergency classification is: Large loss of coolant accident with failure of Emergency Core Cooling System

9. The emergency condition:
X (a) Does not involve the release of radioactive materials from the plant.
_____(b) Involves the potential for a release, but no release is occurring.
_____(c) Involves a release of radioactive material.

10. We recommend the following protective action:

_____(a) No protective action is recommended at this time.

__X__(b) People living in zones A-O + X (5 mi. DW) remain indoors with the doors and windows closed.

_____(c) People in zones _____ evacuate their homes and businesses.

_____(d) Pregnant women and children in zones _____ remain indoors with the doors and windows closed.

_____(e) Pregnant women and children in zones _____ evacuate to the nearest shelter/reception center.

_____(f) Other recommendations: _____

_____

11. There will be:

__X__(a) A followup message

_____(b) No further communications

12. I repeat, this message: APPROVED FOR RELEASE

__X__(a) Reports an actual emergency _____ (Emerg. Coord. Time.)

_____(b) Is an exercise message

13. RELAY THIS INFORMATION TO THE PERSONS INDICATED ON YOUR ALERT PROCEDURE FOR AN INCIDENT AT A NUCLEAR FACILITY.

END OF INITIAL WARNING MESSAGE

PART II

1. The type of actual or projected release is: N/A

_____(a) Airborne

_____(b) Waterborne

_____(c) Surface spill

_____(d) Other

2. The source and description of the release is: N/A

_____

3. __N/A__(a) Release began/will begin at _____ a.m./p.m.; time since reactor trip is 1/2 hours.

__N/A__(b) The estimated duration of the release is _____ hours.

4. **Dose projection base data:**

Radiological release: N/A curies, or _____ curies/sec.

Windspeed: 5 mph

Wind direction: From 180°

Stability class: D (A,B,C,D,E,F, or G)

Release height: N/A Ft.

Dose conversion factor: N/A R/hr/Ci/m³ (whole body)
N/A R/hr/Ci/m³ (Child Thyroid)

Precipitation: 0

Temperature at the site: 72°F

5. **Dose projections:** N/A

Dose Commitment

Distance	Whole Body Rem/hour	(Child Thyroid) Rem/hour of inhalation
Site boundary		
2 miles		
5 miles		
10 miles		

Projected Integrated Dose in Rem

Distance	Whole Body	Child Thyroid
Site boundary		
2 miles		
5 miles		
10 miles		

6. **Field measurement of dose rate or contamination (if available):** Later

7. **Emergency actions underway at the facility include:** Cooling down primary system to depressurize

8. **Onsite support needed from offsite organizations:** None

9. **Plant status:**

(a) Reactor is: not tripped/tripped

(b) Plant is at: 0 % power/hot shutdown/cold shutdown/cooling down

(c) Prognosis is: stable/improving/degrading/unknown

10. I repeat, this message:

___x___(a) Reports an actual emergency.

_____(b) Is an exercise message.

11. Do you have any questions?

_____
(Emerg. Coord. Time)

END OF FOLLOW-UP MESSAGE

NOTE: Record the name, title, date, time, and warning point notified. (Senders)

Record the name, title, date, time, and persons notified per alert procedure. (Receivers)

1. _____
(name) (title)

_____
(date) (time) (warning point)

2. _____
(name) (title)

_____
(date) (time) (warning point)

3. _____
(name) (title)

_____
(date) (time) (warning point)

4. _____
(name) (title)

_____
(date) (time) (warning point)

5. _____
(name) (title)

_____
(date) (time) (warning point)

6. _____
(name) (title)

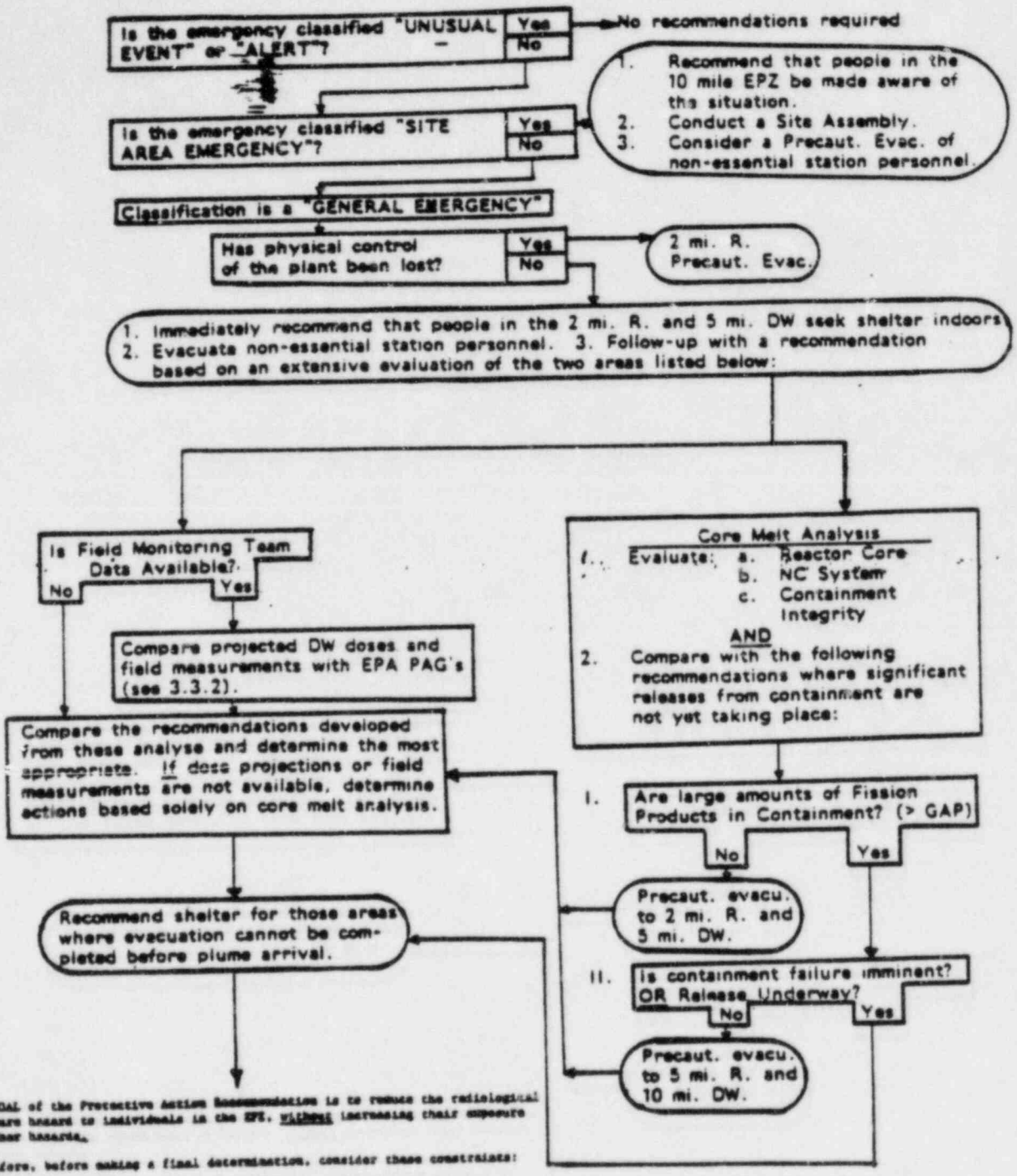
_____
(date) (time) (warning point)

7. _____
(name) (title)

_____
(date) (time) (warning point)

ENCLOSURE 4.4
PROTECTIVE ACTION RECOMMENDATION
FLOW CHART

RP/0/A/5000/05
GENERAL EMERGENCY
Page 1 of 1



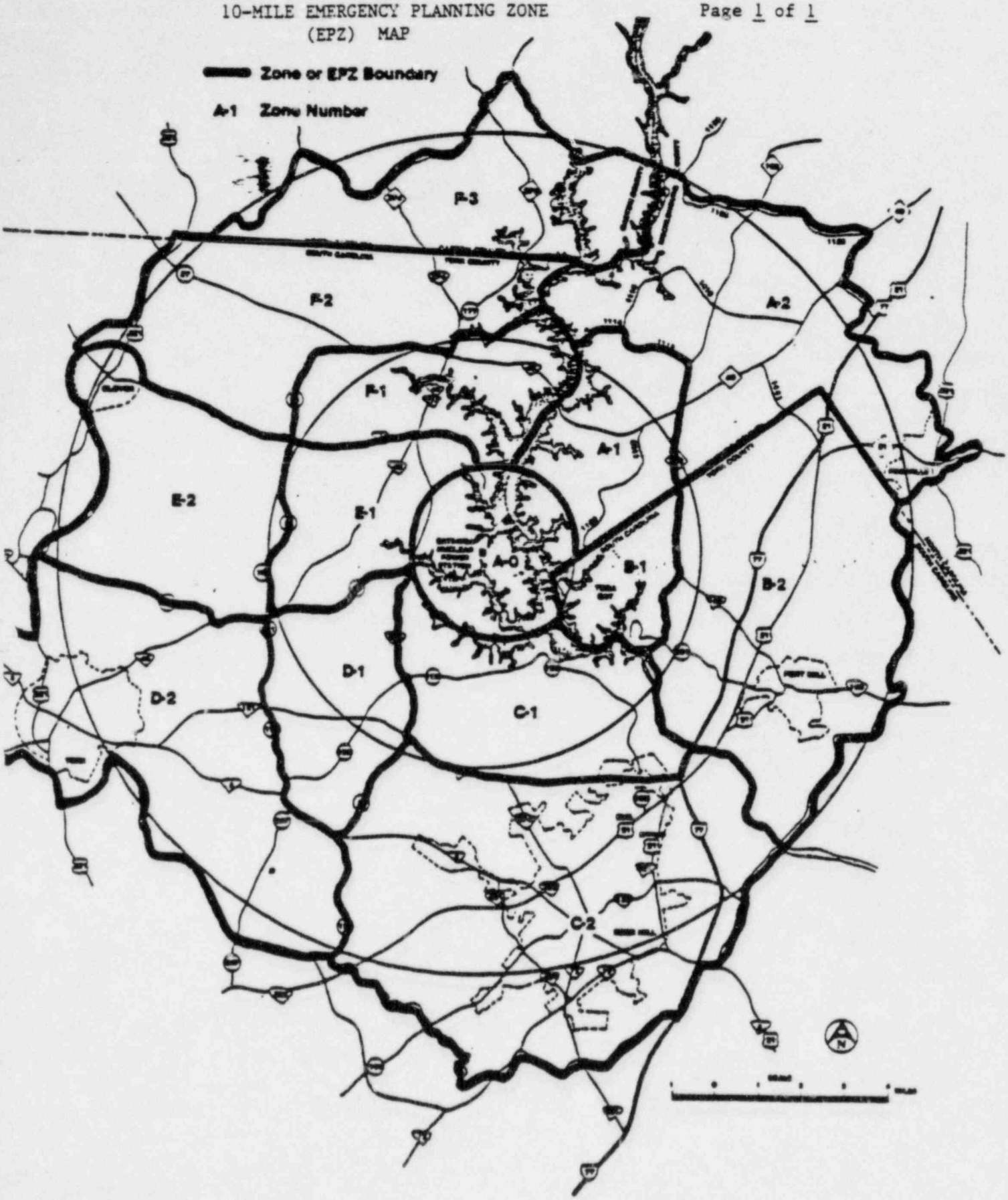
The GOAL of the Protective Action Recommendation is to reduce the radiological exposure hazard to individuals in the EPZ, without increasing their exposure to other hazards.

Therefore, before making a final determination, consider these constraints:

1. Do not evacuate the public if evacuation cannot be completed before estimated plume arrival. (Compare evacuation time estimate versus estimated plume arrival time.)
2. Concentrate on evacuation of areas nearest the plant.
3. Do bridge and road conditions present an impediment to evacuation?
4. Will weather conditions inhibit evacuation?
5. Can State/County agencies support the recommendation?
6. Is this a "Puff" or continuous release?
7. For any evacuation, recommend sheltering for the population in the plume exposure EPZ not evacuated.
8. Promptly reassess the population affected by any ground contamination following plume passage.

Abbreviations
DW - Downwind
R - Radius

CATAWBA NUCLEAR STATION
10-MILE EMERGENCY PLANNING ZONE
(EPZ) MAP



Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/06
Change(s) 0 to
1 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: NATURAL DISASTER

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter H. LeRoy DATE: 8/20/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
NATURAL DISASTER

1.0 SYMPTOMS

1.1 Observation of Hurricane, Tornado, Flood, Low Lake Level or Seiche (Lake Tidal Wave)

1.2 Notification by: National Weather Service (NOAA Broadcast), System Dispatcher, Local Radio Broadcast

2.0 IMMEDIATE ACTIONS

Initial/N/A

_____ 2.1 Shutdown Reactor(s)

2.1.1 **Should conditions develop which jeopardize the safe operation of the reactor, take the unit(s) to hot shutdown**

DESIGN BASIS CONDITIONS

Sustained Winds	High Lake Level	Low Lake Level
> 95 mph*	> 593.5 Ft MSL	< 550.4 Ft MSL

NOTE: Seiche is same as High Lake Level.

* Wind speed information >60mph must be obtained from NWS

_____ 2.2 Notification

2.2.1 Classify the emergency by RP/0/A/5000/01, Classification of Emergency, and commence notification and/or other protective measures as directed by appropriate Emergency Response Procedure.

2.2.2 Announce the impending condition over the plant PA System when appropriate.

3.0 SUBSEQUENT ACTIONS

_____ 3.1 Contact the National Weather Service at 704-399-6000 to obtain the latest forecast/information.

_____ 3.2 If conditions permit, move the station vehicles inside the Turbine Building.

_____ 3.3 Close or check closed all truck and personnel access doors on the Auxiliary and Turbine Buildings and Warehouse.

Initials/N/A

_____ 3.4 Minimize or stop all handling of radioactive materials and releases of radioactive waste to the environment for the duration of the emergency.

_____ 3.5 Monitor Ground Water Drainage System operation closely.

_____ 3.6 Monitor sump levels periodically.

_____ 3.7 On Low Low Lake Level of 554.4 ft. MSL, refer to AP/1/A/5500/20, Loss of RN System, if RN swapover to the Standby Nuclear Service Water Pond has not occurred automatically.

_____ 3.8 When conditions permit, perform a survey of plant structures and equipment to determine the extent of damage, if any, and record in the Shift Supervisor's Log.

4.0 ENCLOSURES

None

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/07
Change(s) 1 to
2 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: EARTHQUAKE

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter M. LeRoy DATE: 8/20/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
EARTHQUAKE

1.0 SYMPTOMS

1.1 Seismic event alarm SMA-3 on 1MC8

1.2 OBE Exceeded alarm on AD-4 (B-8)

1.3 Light on Peak Shock Annunciator PSA-1575 on 1MC8

1.4 Effects of an earthquake are seen, felt or heard.

2.0 IMMEDIATE ACTIONS

Initial/N/A

_____ 2.1 Shutdown Reactor(s)

2.1.1 If the Operational Basis Earthquake (OBE) Exceeded Alarm is received and the effects of an earthquake are felt, then immediately take Reactor(s) to Hot Standby.

2.1.2 Notify I&E to remove the magnetic tapes from the SMA-3 recorder to evaluate and verify the magnitude of the earthquake in accordance with IP/0/B/3341/03.

2.1.3 If the earthquake intensity is >.15g horizontal and/or >.1g vertical (SSE level), then proceed to take the reactor(s) to Cold Shutdown.

_____ 2.2 Classify the emergency by RP/0/A/5000/01, Classification of Emergency and commence notification and/or other protective measures as directed by appropriate Emergency Response Procedure.

3.0 SUBSEQUENT ACTIONS

_____ 3.1 All records made by accelerographs and recorders shall be evaluated to verify the extent of the earthquake.

3.1.1 See Enclosure 4.1 for locations and procedure numbers of seismic instruments.

3.1.2 Seismic verification may be obtained by calling the National Earthquake Information Service at (303) 236-1500.

_____ 3.2 Perform a survey of the plant structures and equipment to determine the extent of damage, if any, and record in the Shift Supervisor's Log.

3.2.1 Notify personnel from I&E and Mechanical Maintenance to assist Operations in the evaluation of earthquake damage if necessary.

3.2.2 Notify Health Physics personnel to survey the Reactor, Auxiliary and Fuel Pool Buildings to ensure shielding integrity.

3.2.3 Notify Chemistry personnel to survey areas where damage may release dangerous chemicals (e.g. Sulfuric Acid Storage).

_____ 3.3 Closely monitor plant parameters to ensure plant safety.

_____ 3.4 Reporting Requirements

3.4.1 If the earthquake was determined to be >OBE, the L&P Engineer or delegate shall make a report to the NRC (Regional Office) within 24 hours via telephone. (TS 6.9.1.12.g)

3.4.2 If the earthquake was determined to be <OBE but recorded on station seismic instrumentation, the L&P Engineer or delegate shall make a written report to the NRC (Regional Office) within 10 days. (TS 4.3.3.4.2)

4.0 ENCLOSURES

4.1 Locations of Seismic Instruments and Procedure Numbers

RP/0/A/5000/07
Enclosure 4.1

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
SEISMIC MONITORING INSTRUMENTS

Type	Instrument #	Name	Location	Procedure #
P	1MIMT-5010	Peak Accelerograph	CA Pipe to S/G 1D	IP/0/B/3341/05
P	1MIMT-5020	Peak Accelerograph	NC Pipe at PZR Surge Line	IP/0/B/3341/05
P	1MIMT-5030	Peak Accelerograph	NI Pump 1A	IP/0/B/3341/05
A (1)	1MIMT-5040	Spectrum Recorder	RB Basement 0°	IP/0/B/3341/04
P	1MIMT-5050	Spectrum Recorder	PZR Lower Support	IP/0/B/3341/04
P	1MIMT-5060	Spectrum Recorder	Aux Bldg. 577 EL (PP-56)	IP/0/B/3341/04
A (2)	1MIMT-5000	Seismic Switch	RB Basement 0°	IP/0/B/3341/01
A	1MIMT-5070	Strong Motion Accelerograph	RB Basement 0°	IP/0/B/3341/03
A	1MIMT-5080	Strong Motion Accelerograph	Annulus 619 EL 0°	IP/0/B/3341/03
A	1MIMT-5090	Starter Unit for SMA-3	RB Basement 0°	IP/0/B/3341/01

P - Passive (historical record) A - Active (remote read-out)

Note 1: Also provides input to Peak Shock Annunciator (PSA1575)
Note 2: Provides indication of OBE Exceeded on AD4 (B-8) in Control Room

Seismic Remote Readouts

SMA-3 Triaxial Time-History Accelerographs (Strong Motion Accelerograph System) - in standby until 0.01g acceleration starts magnetic tape recorder unit - back up power supply from built in battery.

SMP-1 Magnetic Tape Playback Unit - plays back one of three channels at a time onto strip chart for data evaluation.

PSA-1575 Peak Shock Annunciator - gives visual warning that >70% OBE (amber light) or >100% OBE (red light) has been exceeded at certain frequencies ($2H_Z$ to 25.4 H_Z)

Form 34731 (10-81)
(Formerly SPD-1002.1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/08
Change(s) 0 to
1 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: RELEASE OF TOXIC OR FLAMMABLE GAS

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Pete, -Y. LeRoy DATE: 8/20/84

Cross-Disciplinary Review By: W. Curtis N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: J. W. Hf Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
RELEASE OF TOXIC OR FLAMMABLE GAS

1.0 SYMPTOMS

1.1 This condition exists when toxic or flammable gases released nearsite or onsite, (verified by analysis if deemed necessary) present a hazard to station personnel or property.

2.0 IMMEDIATE ACTIONS

Initial/N/A

_____ 2.1 Classify the emergency by RP/0/A/5000/01, Classification of Emergency and commence notification and/or other protective measures as directed by appropriate Emergency Response Procedure.

3.0 SUBSEQUENT ACTIONS

_____ 3.1 The Shift Supervisor will request the Station Safety Section to evaluate the hazardous condition.

_____ 3.2 The Shift Supervisor will take appropriate actions to ensure the safety of all persons and property in the potentially affected areas.

3.2.1 Initiate a Site Assembly and/or Evacuation if necessary.

3.2.2 Notify outside services per Enclosure 4.1 if help needed.

_____ 3.3 In the event that evacuation of the Control Room appears imminent, refer to AP/1/A/5500/17, Loss of Control Room.

4.0 ENCLOSURE

4.1 Emergency Telephone Numbers

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
EMERGENCY TELEPHONE NUMBERS

Ambulance & Medical	Piedmont Medical Center	(803) 329-1111
Rescue Squad	Clover Rescue Squad	(803) 222-9494
Fire Department	Bethel Volunteer Fire Department . . .	(803) 631-4112

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/09
Change(s) 0 to
1 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: COLLISION/EXPLOSION

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter M. Le Roy DATE: 8/20/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
COLLISION/EXPLOSION

1.0 SYMPTOMS

1.1 Observance of the following incident onsite or near site:

1.1.1 Aircraft crash or threatening aircraft activity

1.1.2 Train derailment

1.1.3 Waterborne collision

1.1.4 Missile impact

1.1.5 Explosion

1.1.6 Incident jeopardizing vital structures or safe shutdown equipment

2.0 IMMEDIATE ACTIONS

Initial/N/A

_____ 2.1 Classify the emergency by RP/0/A/5000/01, Classification of Emergency, and commence notification and/or other protective measures as directed by appropriate Emergency Response Procedure.

3.0 SUBSEQUENT ACTIONS *

_____ 3.1 Take appropriate actions to ensure the safety of the reactor(s).

_____ 3.2 Perform emergency first aid as necessary.

_____ 3.3 Extinguish any fire(s) if applicable.

_____ 3.4 Notify Chemistry if there are any chemical implications.

_____ 3.5 Notify Health Physics if there are any radiological implications.

_____ 3.6 Notify Security for any event.

_____ 3.7 Notify applicable outside agencies as necessary. (Enclosure 4.1)

4.0 ENCLOSURES

4.1 Emergency Telephone Numbers

* These actions may be performed concurrently as appropriate

RP/0/A/5000/09
Enclosure 4.1

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
EMERGENCY TELEPHONE NUMBERS

Ambulance & Medical*	Piedmont Medical Center	(803) 329-1111
Rescue Squad*	Clover Rescue Squad	(803) 222-9494

*Security will normally initiate the call for outside medical assistance..

Fire Department	Bethel Volunteer Fire Department . . .	(803) 631-4112
Federal Aviation Administration - 24 Hr. Number		(704) 399-1041
Duke Power Company Railroad Contact - Wayne Hallman		78-2345 Days
	Home	[redacted]

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/10
Change(s) 1 to
2 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: CONDUCTING A SITE ASSEMBLY or EVACUATION

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter M. LeRoy DATE: 8/20/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
CONDUCTING A SITE ASSEMBLY OR EVACUATION

1.0 SYMPTOMS

1.1 A Site Assembly is an occurance that warrants the accountability of all personnel on site for reasons of personnel safety or for dissemination of information.

1.1.1 Alert, if plant conditions are rapidly degrading

1.1.2 Site Area Emergency or General Emergency

1.1.3 Other plant conditions that, in the opinion of the Shift Supervisor/Emergency Coordinator, warrant a precautionary assembly

1.1.4 Auxiliary Building Radiation Levels

1.1.4.1 Radiation levels in unrestricted areas of > 2 mr/hr.

1.1.4.2 Airborne Radiation Levels > 1×10^6 cpm by EMF-41.

1.2 A Site Evacuation is an occurance that necessitates the evacuation of non-essential personnel for reasons of safety.

1.2.1 Site Area Emergency, if plant conditions are rapidly degrading

1.2.2 General Emergency

1.2.3 Other plant conditions that, in the opinion of the Shift Supervisor/Emergency Coordinator, warrant a precautionary evacuation.

2.0 IMMEDIATE ACTIONS

2.1 Site Assembly

2.1.1 Contact the Security Shift Lieutenant or Clerk at extension 2393 to inform them that a Site Assembly is being initiated.

2.1.2 The Shift Supervisor or delegate shall sound a twenty second blast of the Site Assembly alarm and make the following announcement on the plant page system:

"This is the Shift Supervisor, this is a Site Assembly. This is a Site Assembly. There is/are

_____
What

in/at _____
Where

All personnel and visitors report to their assembly points (parking lot if a bomb threat)."

NOTE: Assembly points are listed in Station Directive 3.0.7.

2.1.2 Repeat 2.1.1 in full.

2.2 Site Evacuation (Must be preceeded by a Site Assembly)

2.2.1 Choosing an Evacuation-Relocation Site

2.2.1.1 Contact Health Physics Duty Supervisor for assistance in assessing the radiological hazard associated with the evacuation.

Plant pager no. 63-214 or 215.

2.2.1.2 Site Alpha (Transmission Line Maintenance Warehouse, Newport, S.C.) is located 4.8 miles SW of the plant.

2.2.1.3 Site Bravo (Allen Steam Station, Belmont, N.C.) is located 10 miles NNE of the plant.

2.2.1.4 Choose the site most opposite the direction that the wind may be carrying any expected release. See Enclosure 4.1.

2.2.2 Contact the Evacuation Coordinator listed in Station Directive 3.8.4, Enclosure 1, to inform him that an Evacuation is being initiated. The Key to Site Alpha is kept at the Security Office in the PAP.

2.2.3 The Shift Supervisor or delegate shall sound a twenty second blast of the Site Evacuation alarm and make the following announcement on the plant page system:

"This is the Shift Supervisor, this is a Site Evacuation. This is a Site Evacuation. All non-essential personnel proceed to Site Alpha/Bravo _____."

2.2.4 Repeat 2.2.3 in full.

3.0 SUBSEQUENT ACTIONS

3.1 Notification

3.1.1 Notify the York County Sheriff's Department or the S.C. Highway Patrol to assist in traffic control. (Station Security shall direct traffic until their arrival.)

A. York County Sheriff 327-2021
B. S.C. Highway Patrol 385-3107

3.1.2 Notify the chosen Evacuation-Relocation Site of the expected arrival of personnel.

A. Alpha - 373-7309 Transmission Line Maintenance Warehouse
B. Bravo - 373-4646 Allen Steam Station

3.2 Continue to repeat Step 2.1.2 or 2.2.3 at 5-minute intervals until notification that the Site Assembly/Evacuation has been completed.

3.3 Securing from a Site Assembly

3.3.1 The Shift Supervisor or delegate shall make the following announcement on the plant page system:

"This is the Shift Supervisor, secure from Site Assembly. Secure from Site Assembly."

3.3.2 Repeat 3.3.1 in full.

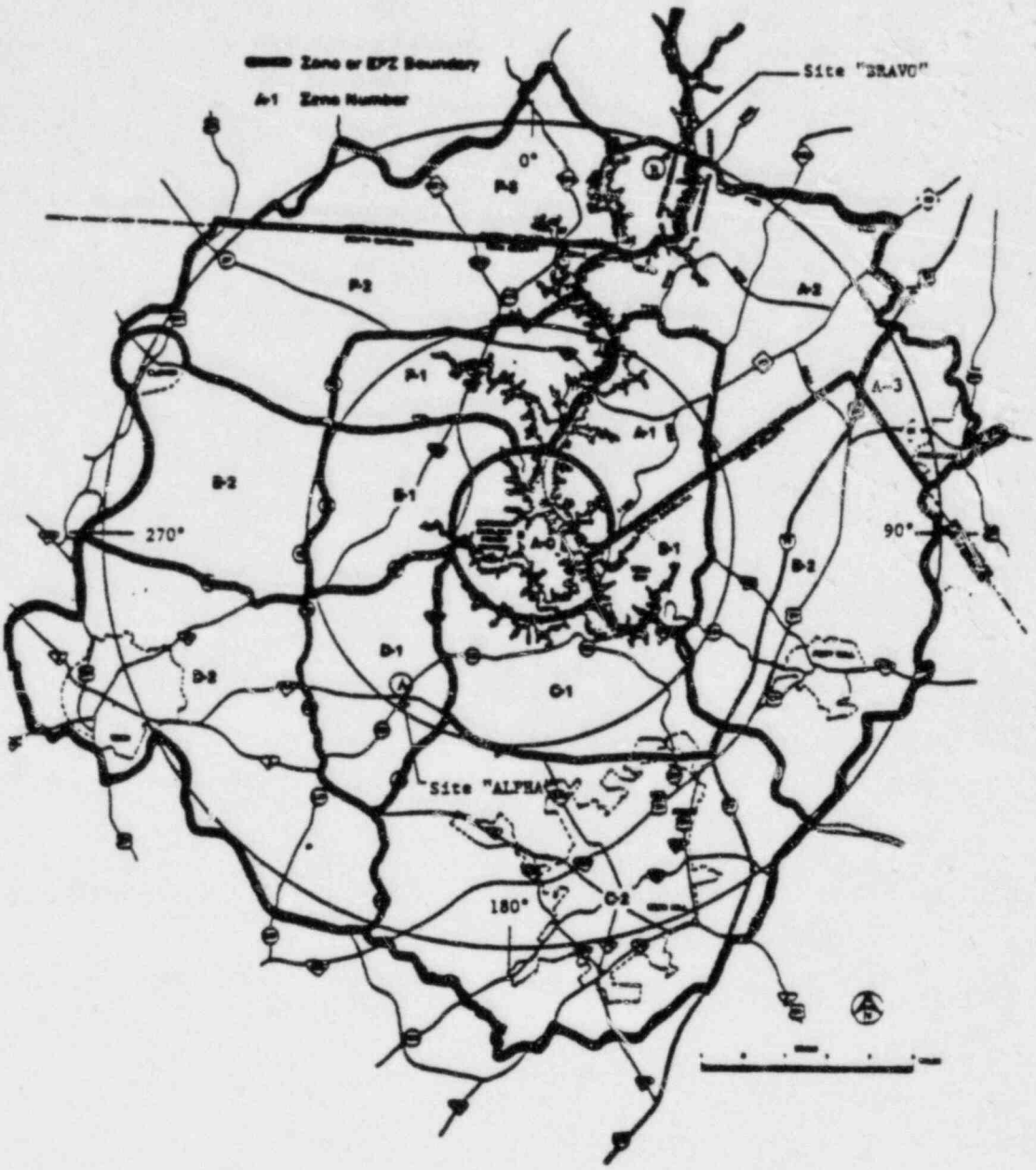
3.4 Securing from a Site Evacuation

3.4.1 The Emergency Coordinator/Shift Supervisor or Recovery Manager at the CMC shall notify the Evacuation Coordinator at the Evacuation-Relocation Site when evacuated personnel can return to their work location.

4.0 ENCLOSURE

4.1 Wind Direction Determination

EVACUATION-RELOCATION WIND DETERMINATION



WIND DIRECTION FROM	USE THIS SITE
145° to 255°	ALPHA
350° to 360° & 0° to 100°	BRAVO

NOTE: Wind Direction is always stated in FROM X° a given direction.
Example: 180° Wind is From 180° blowing toward 0°.

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/A/5000/11
Change(s) 0 to
1 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: PROTECTIVE ACTION RECOMMENDATIONS WITHOUT THE OAC

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Peter D Lekay DATE: 8/20/84

Cross-Disciplinary Review By: [illegible] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
PROTECTIVE ACTION RECOMMENDATIONS
WITHOUT THE OAC

1.0 SYMPTOMS

1.1 LOCA with

1.1.1 EMF-53A or 53B, Containment High Range Radiation Monitor, in alarm

or

1.1.2 EMF-36(L), Unit Vent Gas Monitor, in alarm.

1.2 Dose Assessment Program Nuclear-23 unavailable.

2.0 IMMEDIATE ACTIONS

2.1 Check Rx Building or Unit Vent Radiation Level as Symptoms Indicate

2.1.1 Check the Reactor Building radiation level by either of the following methods:

2.1.1.1 Record EMF-53A and EMF-53B readouts on Enclosure 4.2.

2.1.1.2 Obtain radiation level from Shift Health Physics using HP/0/B/1009/06 (Alternative Methods for Determining Dose Rate Within the Reactor Building). Record on Enclosure 4.2.

2.1.2 Record EMF-36(L) and EMF-36(H) readings on Enclosure 4.3.

2.2 Perform the following based on radiation levels.

2.2.1 If the Reactor Building radiatin level is $\leq$ 35 R/hr, continue monitoring the Reactor Building radiatin level.

2.2.2 If the Reactor Building radiatin level is > 35 R/hr, complete Enclosures 4.1, 4.2 and 4.4.

2.2.3 If EMF-36 (L) is $\leq$ 30,000 cpm, continue monitoring Unit Vent radiatin level.

2.2.4 If EMF-36(L) is > 30,000 cpm, complete Enclosures 4.1, 4.3 and 4.4

2.3 Recommendations

2.3.1 Determine Protective Action Recommendations from Step 1 of Enclosure 4.4.

2.3.2 Determine the affected zone(s) from Step 2 of Enclosure 4.4.

2.3.3 Always include Zone A-0 in Recommendations.

2.3.4 See RP/0/A/5000/05 (General Emergency) for Recommendation Format.

3.0 SUBSEQUENT ACTIONS

3.1 Determine the need for protective actions once every hour if:

3.1.1 The Reactor Building radiation level is > 35 R/hr for > 1 hour, or

3.1.2 EMF-36(L) is > 30,000 cpm for > 1 hour.

4.0 ENCLOSURES

4.1 Clock and Meteorological Data Sheet

4.2 Reactor Building Data - Calculation Sheet

4.3 Unit Vent Data - Calculation Sheet

4.4 Protective Action Recommendation Worksheet

4.5 Limits and Precautions

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
RP/0/A/5000/11
ENCLOSURE 4.1

CLOCK AND METEOROLOGICAL DATA SHEET

Unit _____

Protective Actions Determined By _____

1. Clock Data

   Time Now _____ Date Now _____

   Time of Reactor Trip _____ Date of Reactor Trip _____

   Hours Since Reactor Trip _____

2. Meteorological Data (from station EEB system or National Weather Service [NWS] at 704-399-6000 if EEB is not available)

   Wind Direction - Upper Tower _____ degrees

   - Lower Tower _____ degrees

   - NWS _____ degrees

   NOTE: If wind direction is indicated to be > 360° then subtract 360° and proceed.

   Wind Speed - Lower Tower _____ mph

   - Upper Tower _____ mph

   - NWS _____ mph

   Actual ΔT - Upper minus Lower Tower _____ °C

   Assumed ΔT - Time now of 1000 to 1600 -0.4°C

   - Time now of 1600 to 1000
   with wind speed > 15 mph -0.1°C
   with wind speed ≤ 15 mph +1.3°C

   NOTE: Assumed ΔT is for use when EEB system is inoperable. ΔT is not available from NWS.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
RP/0/A/5000/11
ENCLOSURE 4.2

REACTOR BUILDING DATA - CALCULATION SHEET

1. Based upon hours since reactor trip, determine the Reactor Trip Time Factor (RTTF) from the table below and record. _____

Hours Since Reactor Trip	RTTF
0.0 - 1.0	12
1.1 - 2.0	17
2.1 - 5.0	27
5.1 - 10.0	42
> 10.0	N/A*

* After 10 hrs. TSC will perform dose calculations.

2. Reactor Building Dose Rate (RBDR).

   a) EMF-53A _____ R/hr.
   EMF-53B _____ R/hr.

   NOTE: Use the highest EMF reading in calculations.

   b) HP/0/B/1009/06 _____ R/hr.

3. Calculate Time Determined Dose (TDT).

   TDT _____ = RBDR _____ x RTTF _____

4. Calculate Wind Determined Dose (WDD) based on Wind Speed (WS).

   WDD _____ = TDT _____ ÷ WS _____

   NOTE 1: Lower WS is preferred. If not available, use upper WS, then WS from National Weather Service.

   NOTE 2: If WS $\leq$ 1 mph then use the value of 1.

5. Go to Enclosure 4.4.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
RP/0/A/5000/11
ENCLOSURE 4.3

UNIT VENT DATA - CALCULATION SHEET

1. Unit Vent EMF Readings

   EMF-36(L) = _____ cpm

   EMF-36(H) = _____ cpm

   Unit Vent Flow Rate = _____ cfm

2. Calculate Time Determined Dose (TDT). If EMF-36(H) is < 100 cpm, calculate DT with Section 2.1. If EMF-36(H) is > 100 cpm, calculate DT with Section 2.2.

   2.1 TDT _____ = EMF-36(L) _____ cpm x _____ cfm x 6.4E-7

   2.2 TDT _____ = EMF-36(H) _____ cpm x _____ cfm x 4.3E-3

3. Calculate Wind Determined Dose (WDD) based on Wind Speed.

   WDD _____ = TDT _____ ÷ WS _____

   NOTE 1: Lower WS is preferred. If not available, use upper WS, the WS from National Weather Service.

   NOTE 2: If WS $\leq$ 1 mph then use the value of 1.

4. Go to Enclosure 4.4.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
RP/0/A/5000/11
ENCLOSURE 4.4

PROTECTIVE ACTION RECOMMENDATION WORK SHEET

1. Based on WDD and ΔT, determine distances and level of protective action from Tables 1.1 and 1.2 below. Circle ΔT, WDD and Protective Action Recommendation.

Table 1.1

0-5 Mile Radius Protective Action Recommendations

	WDD Values		
ΔT: ≤ -0.6	≤ 4.10E6	4.10E6 to 2.00E7	> 2.00E7
-0.6 to -0.5	≤ 1.10E5	1.10E5 to 5.50E5	> 5.50E5
-0.4 to -0.2	≤ 3.50E4	3.50E4 to 1.70E5	> 1.70E5
-0.1 to +0.4	≤ 2.00E4	2.00E4 to 1.00E5	> 1.00E5
+0.5 to +1.2	≤ 9.80E3	9.80E3 to 4.90E4	> 4.90E4
≥ +1.2	≤ 4.50E3	4.50E3 to 2.20E4	> 2.20E4

	Consider		
Protective Action Recommendations	NO ACTION	EVACUATION PARTICULARLY FOR CHILDREN AND PREGNANT WOMEN	EVACUATE EVERYONE

Table 1.2

5-10 Mile Radius Protective Action Recommendations

	WDD Values		
ΔT: ≤ -0.6	≤ 2.00E7	2.00E7 to 1.00E8	> 1.00E8
-0.5 to -0.4	≤ 1.80E6	1.80E6 to 9.20E6	> 9.20E6
-0.4 to -0.2	≤ 4.10E5	4.10E5 to 2.00E6	> 2.00E6
-0.1 to +0.4	≤ 2.00E5	2.00E5 to 1.00E6	> 1.00E6
+0.5 to +1.2	≤ 7.90E4	7.90E4 to 3.90E5	> 3.90E5
≥ +1.2	≤ 2.90E4	2.90E4 to 1.40E5	> 1.40E5

	Consider		
Protective Action Recommendations	NO ACTION	EVACUATION PARTICULARLY FOR CHILDREN AND PREGNANT WOMEN	EVACUATE EVERYONE

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
RP/0/A/5000/11
ENCLOSURE 4.4

PROTECTIVE ACTION RECOMMENDATION WORK SHEET

2. Based on wind direction (WD), determine the affected zones from the tables below. Circle the wind direction and affected zones.

NOTE: Upper tower wind direction is preferred. If not available, use lower WD, then use WD from National Weather Service.

A. IF WIND SPEED IS < 5 MPH, THE AFFECTED ZONES ARE A-0, A-1, B-1, C-1, D-1, E-1 and F-1.

B. IF WIND SPEED IS > 5 MPH, SELECT THE AFFECTED ZONES FROM THE TABLES BELOW AS APPLICABLE.

Table 2.1

0-5 Mile Radius Wind Direction	Affected Zones
0.1° - 360°	A-0
PLUS	
0.1° - 22°	C-1, D-1
22° - 73°	C-1, D-1, E-1
73° - 108°	C-1, D-1, E-1, F-1
108° - 120°	D-1, E-1, F-1
120° - 159°	E-1, F-1
159° - 207°	E-1, F-1, A-1
207° - 247°	F-1, A-1, B-1
247° - 265°	A-1, B-1
265° - 298°	A-1, B-1, C-1
298° - 338°	B-1, C-1
338° - 360°	B-1, C-1, D-1

Table 2.2

5-10 Mile Radius Wind Direction	Affected Zones
0.1 - 27°	C-2, D-2
27° - 69°	C-2, D-2, E-2
69° - 95°	D-2, E-2, F-2
95° - 132°	D-2, E-2, F-2, F-3
132° - 144°	E-2, F-2, F-3
144° - 160°	E-2, F-2, F-3, A-2
160° - 201°	F-2, F-3, A-2
201° - 229°	F-2, F-3, A-2, B-2
229° - 249°	F-3, A-2, B-2
249° - 259°	A-2, A-3, B-2
259° - 290°	A-2, B-2, C-2, A-3
290° - 304°	A-3, B-2, C-2
304° - 333°	B-2, C-2
333° - 360°	B-2, C-2, D-2

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
RP/0/A/5000/11
ENCLOSURE 4.5

LIMITS AND PRECAUTIONS

1. This procedure is to be used by Control Room Operations personnel only in the event the Operator Aid Computer is not available to perform the calculation of protective action recommendation and the Technical Support Center is not activated.

   NOTE: This procedure is applicable only in the first 10 hours after the Reactor Trip.

2. This procedure is conservative in its ability to protect the public in that:

   a. A 45° wide plume is assumed with an additional 22½° on each side of the plume.

   b. Wind determined dose (WDD) has a built in margin of safety.

   c. There are three sources of meteorological data:

      1) EEB System upper and lower towers
      2) National Weather Service at Charlotte Office of National Weather Service
      3) Established data from CNS FSAR

3. All protective action recommendations relate to child thyroid dose protective action guides.

4. The ratio of I-131 eq. to Xe-133 eq. in the unit vent is assumed to be 9.74E-3.

5. The basis for the unit vent method is HP/0/B/1009/13, Offsite Dose Projection - Uncontrolled Release of Radioactive Material Through the Unit Vent.

6. 6.4E-7 and 4.3E-3 are unitless constants which relate unit vent data to the WDD value tables used to determine protective action recommendations.

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: RP/0/B/5000/13
Change(s) 0 to
1 Incorporated

(2) STATION: CATAWBA

(3) PROCEDURE TITLE: NRC NOTIFICATION REQUIREMENTS

(4) PREPARED BY: Mike Bolch DATE: Aug. 16, 1984

(5) REVIEWED BY: Pete, E. LeRoy DATE: 8/20/84

Cross-Disciplinary Review By: [signature] N/R: 8-21-84

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/21/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
NRC NOTIFICATION REQUIREMENTS

1.0 SYMPTOMS

1.1 Plant conditions requiring NRC notification in accordance with: 10 CFR50.72, 10 CFR20.205, 10 CFR20.403, and 10 CFR73.71. For Immediate, 1 Hour and 4 Hour Notifications.

1.2 See Enclosure 4.1 for determination of appropriate notification requirement.

2.0 IMMEDIATE ACTIONS

2.1 Complete one of the following enclosures:

2.1.1 Enclosure 4.2 "Checklist for Significant Event Notification"

or

2.1.2 Enclosure 4.3 "Report of Serious Physical Security Events"

When reporting from Section 4.1.2.7 of Enclosure 4.1

NOTE: No Enclosure for reporting to Region II from Section 4.1.1.5 of Enclosure 4.1

2.2 Notify the NRC Operations Center by the following means:

2.2.1 Primary - Emergency Notification System Phone

or

2.2.2 Alternate [redacted]

2.3 Notify the NRC Region II Office at [redacted] of any event listed in Section 4.1.1.5 of Enclosure 4.1.

3.0 SUBSEQUENT ACTIONS

3.1 Provide follow-up notification as described below:

3.1.1 Emergency Classes

3.1.1.1 Any further degradation in level of safety of the plant including those that require declaration of any Emergency Class, if such a declaration has not been previously made.

or

3.1.1.2 Any change in the Emergency Class

or

3.1.1.3 Termination of the Emergency

3.1.2 Results of ensuing evaluations or assessments of plant conditions

3.1.3 Effectiveness of response or protective measures taken

3.1.4 Information related to plant behavior that is not understood

3.2 Maintain an "Open", continuous, communications channel with the NRC Operations Center, upon request by the NRC.

3.3 Notify the following individuals within 4 hours:

NOTE: The requirement for direct notification in this paragraph is for all events NOT INVOLVING the declaration of an EMERGENCY CLASS. For all Emergency Plan notifications the station Licensing & Projects Engineer is responsible for notifying the NRC Resident Inspector.

3.3.1 Licensing & Projects Engineer

Primary		Alternate
C. L. Hartzell Office: Home: [redacted]	or	P. G. LeRoy Office: Home: [redacted]

3.3.2 NRC Resident Inspector

Primary		Alternate
P. H. Skinner Office: Home: [redacted]	or	P. K. VanDoorn Office: Home: [redacted]

3.4 Upon completion of this procedure, attach a completed Procedure Process Record Form and forward to the Licensing & Projects Engineer for review prior to submission to Master File.

4.0 ENCLOSURES

4.1 Events Requiring NRC Notification

4.2 Checklist for Serious Event Notification

4.3 Report of Serious Physical Security Events

4.1.1 Events Requiring "IMMEDIATE NOTIFICATIONS":

Immediately after notification to states and counties and not later than one hour after the time the Emergency Class was declared.

4.1.1.1 The declaration of any of the Emergency Classes specified in the Catawba Emergency Plan

and

4.1.1.2 Any change from one Emergency Class to another

or

4.1.1.3 Termination of the Emergency

4.1.1.4 For any incident involving byproduct, source or special nuclear material which may have caused or threatens to cause the following:

4.1.1.4.1 Individual Exposure

≥ 25 Rem Whole Body

or

≥ 150 Rem Skin of Whole Body

or

≥ 375 Rem Extremities

4.1.1.4.2 Release of radioactive material in concentration which if averaged over a 24 hour period would exceed 5,000 times the applicable concentration of the limits specified in 10 CFR 20, Appendix B, Table II.

4.1.1.4.3 Loss of one working week or more of the operation of any unit.

4.1.1.4.4 Damage to property in excess of $200,000.

4.1.1.5 Notification to NRC Reginal Office, Region II, Atlanta, GA. (see Step 2.3). Receipt of a package of radioactive materials with:

4.1.1.5.1 ≥0.01 uCi/100cm^2 loose radioactive material on the external surface

or

4.1.1.5.2 >200 MR/hr. on external surface

or

4.1.1.5.3 >10 MR/hr. at three (3) feet from the external surface

4.1.2 Events Requiring "ONE HOUR REPORTS":

As soon as practical and within one hour of the occurrence.

4.1.2.1 The initiation of any nuclear plant shutdown required by Technical Specifications (i.e. Safety Limit Violation)

4.1.2.2 Any deviation from a plant License Condition or Technical Specification authorized in 10CFR50.54(x).
(Licensee may take reasonable action that departs from a license condition or a technical specification in an emergency when this action is immediately needed to protect the health and safety of the public and no action consistent with license conditions and technical specifications that can provide adequate or equivalent protection is immediately apparent.)

4.1.2.3 Any event or condition during operation that results in the condition of the plant, including the principle safety barriers, being seriously degraded, or results in the plant being:

4.1.2.3.1 In an unanalyzed condition that significantly compromises plant safety.

4.1.2.3.2 In a condition that is outside the design basis of the plant.

4.1.2.3.3 In a condition not covered by the plant's operating and emergency procedures.

4.1.2.4 Any event that results or should have resulted in Emergency Core Cooling System (ECCS) discharge into the reactor coolant system as a result of a valid signal.

4.1.2.5 Any event that results in a major loss of emergency assessment capability, offsite response capability, or communications capability (e.g., significant portion of control room indication, Emergency Notification System or Offsite Notification System).

4.1.2.6 Any natural phenomenon or other external condition or any event that poses an actual threat to the safety of the plant or significantly hampers site personnel in the performance of duties necessary for the safe operation of the plant, including fires, toxic gas releases or radioactive releases.

4.1.2.7 Safeguard events as determined by Security personnel and Station Management.

4.1.2.7.1 A trace investigation of a lost or unaccounted for shipment pursuant to 10 CFR 73.27.

4.1.2.7.2 An attempt (actual or suspected) to commit a theft or unlawful diversion of Special Nuclear Material.

4.1.2.7.3 Any event which significantly threatens or lessens the effectiveness of the physical security system Uncompensated one (1) hour safeguards events

a. Confirmed Intrusion or Sabotage attempt (explicit threat).

b. Attempted entry of unauthorized Incendiary devices into Protected Area.

c. Bomp Threat/Extortion Threat (Explicit Threat, includes entry into vital area(s)).

d. Mass Demonstration, Picketing, Civil Disturbance (Explicit Threat, Event occurs inside the Protected Area).

e. Loss of both CAS/SAS (Major loss of physical security effectiveness).

f. Loss of Offsite Communications to LLEA (Local Law Enforcement Agency).

g. Loss or Degradation of Power Supply to Security Systems.

h. Unavailability of minimum number of Security Force Members.

i. Decreased effectiveness of the Physical Barriers (Vital or Protected Area) creating a major loss of physical security effectiveness.

4.1.3 Events Requiring "FOUR HOUR REPORTS"

As soon as practical and within four hours of the occurrence.

4.1.3.1 Any event found while the reactor(s) is/are shutdown, that had it been found while the reactor(s) was/were in operation would have resulted in the plant, including its principle safety barriers, being seriously degraded or being in an unanalyzed condition that significantly compromises plant safety.

4.1.3.2 Any event or condition that results in manual or automatic activation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS). (However, activation of an ESF including the RPS, that results from and is part of the preplanned sequence during testing or reactor operation need not be reported).

4.1.3.3 Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to:

4.1.3.3.1 Shutdown the reactor and maintain it in a safe shutdown condition.

4.1.3.3.2 Remove residual heat.

4.1.3.3.3 Control the release of radioactive material.

4.1.3.3.4 Mitigate the consequences of an accident.

4.1.3.4 Any airborne radioactive release that exceeds 2 times the applicable concentrations of the limits specified in 10CFR20, Appendix B, Table II in unrestricted areas when averaged over a time period of one hour.

4.1.3.5 Any liquid effluent release that exceeds 2 times the limiting combined MPC (See 10CFR20, Appendix B, Note 1.) at the point of entry into the receiving water (unrestricted area) for all radionuclides except tritium and dissolved noble gases, when averaged over a time period of one hour. (Immediate Notifications made under this requirement also satisfy the requirements of 10CFR20.403, Paragraph (a)(2) and (b)(2)). (See 4.1.1.4.2).

4.1.3.6 Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment.

4.1.3.7 Any event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a News Release is planned

or

Notification to Other Government Agencies has been or will be made. Such an event may include an onsite fatality or inadventent release of radioactively contaminated materials.

4.1.4 Follow-up Notifications

4.1.4.1 During the course of the event, report:

4.1.4.1.1 Any further degradation in the level of safety of the plant or other worsening plant conditions, including those that require the declaration of any of the Emergency Classes, if such a delcaration has not been previously made

or

Any change in the Emergency Class

or

Termination of the Emergency.

4.1.4.1.2 The results of ensuing evaluations or assessments of plant conditions

4.1.4.1.3 The effectiveness of response or protective measures taken.

4.1.4.1.4 Information related to plart behavior that is not understood.

CHECKLIST FOR SIGNIFICANT EVENT NOTIFICATION

4.2.1 Complete the applicable portions of this enclosure and transmit to the NRC Operations Center as required by Enclosure 4.1 or as soon as practical.

4.2.1.1 State the following to the NRC Operations Center:

"THIS NOTIFICATION IS MADE IN ACCORDANCE WITH 10CFR50.72. THIS IS DUKE POWER COMPANY'S CATAWBA NUCLEAR STATION IN NRC REGION II MAKING THE NOTIFICATION."

1. My Name is: _____ My title is: _____

   I can be called-back at _____

2. Time of Notification _____ Event Time _____ EDT.

   Event Date __/__/__. NRC person notified: _____
   M D Y

3. This Notification is: Check appropriate box(s).

   a. ☐-Emergency Plan Declaration ☐-Other Immediate Notification

      ☐- Notification of Unusual Event

      ☐- Alert

      ☐- Site Area Emergency

      ☐- General Emergency

   b. ☐-A "ONE-HOUR" Notification

   c. ☐-A "FOUR-HOUR" Notification

4. Event description and cause:

   _____

   _____

   _____

   _____

5. Plant Status:

   a. Unit affected: 1/2/Both.

   b. Power prior to event: _____

   c. Power at time of report: _____

   d. Unit tripped: yes/no. Initiating Trip Signal: _____

   e. Mode description: _____

   f. ESF Acutation: yes/no.

   g. Safety Injection or ECCS: yes/no Initiating Signal ____

   h. Primary System Temperature: t_{Hot} _____,
      t_{Cold} _____

   i. NC Flow: yes/no, NC Pump Status: A: on/off, B: on/off,
      C: on/off, D: on/off.

   j. Heat Sink: _____

   k. Pressurizer Level: _____

   l. Steam Generator Level(s): A ____ B ____ C ____ D ____

   m. Feedwater Status: Main _____ Aux _____

   n. Containment Pressure: _____ Sump Level: _____

   o. Equipment Failures (Include Status of Safety Systems): ___
      _____
      _____

   p. Electrical Power Supplies available:
      Normal Offsite: yes/no,
      Busses/Loads Lost: _____
      D/G Running: yes/no, Loaded: yes/no

6. Status of unaffected unit: _____

7. Radioactive Release: yes/no (If yes complete this paragraph)

   a. Release: Liquid/Gas
   b. Location/Source: _____
      _____
      _____
   c. Release Rate: _____
      _____
   d. Duration of Release: _____
   e. Stopped: yes/no
   f. Monitored: yes/no
   g. Estimated Amount Released: _____
      _____
      _____

h. Affected Plant/Offsite areas affected: _____

i. Areas Evacuated: _____

j. Other Actions Taken _____

8. Other major problems (Include anything unusual or not understood):

9. Planned actions/Press releases/Emergency Centers activated: _____

10. Outside Agency/Personnel Notified:

Counties:		State(s):	
York	yes/no	N.C.	yes/no
Gaston	yes/no	S.C.	yes/no
Mecklenburg	yes/no		

NRC Resident: yes/no

Corporate Headquarters: yes/no,

Others:

REPORT OF SERIOUS PHYSICAL SECURITY EVENTS

DATE/TIME OF NOTIFICATION _____

NRC PERSON NOTIFIED _____

State the following to the NRC Operations Center:

"THIS NOTIFICATION IS MADE IN ACCORDANCE WITH 10CFR73.71. THIS IS DUKE POWER COMPANY'S CATAWBA NUCLEAR STATION IN NRC REGION II MAKING THE NOTIFICATION".

My Name is: _____ My title is: _____

I can be reached at _____.

1. *DATE OF OCCURRENCE: _____ 3.*POWER LEVEL OF UNITS:

2. *TIME OF OCCURRENCE: _____ Unit 1 _____
Unit 2 _____

*If date and time of occurrence are not known, indicate the date and time of discovery.

4. DESCRIPTION OF EVENT: _____

_____

_____

5. SECURITY RESPONSE/COMPENSATORY MEASURES ESTABLISHED: _____

_____

_____

6. LLEA (Local Law Enforcement Agency) NOTIFIED? YES ___ NO ___
(If Yes, name organization and telephone number) _____

_____

7. VITAL AREA(S) AFFECTED? YES ___ NO ___
Description of Equipment Systems Affected _____

_____

_____

Form 34731 (10-81)
(Formerly 3PD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: HP/0/B/1009/03
Change(s) 0 to
1 Incorporated

(2) STATION: Catawba Nuclear

(3) PROCEDURE TITLE: Environmental Surveillance Following A Primary To Secondary Leak

(4) PREPARED BY: Edwin M. Bufield DATE: 8-6-84

(5) REVIEWED BY: [signature] DATE: 8-6-84

Cross-Disciplinary Review By: _____ N/R: [signature]

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/6/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
ENVIRONMENTAL SURVEILLANCE FOLLOWING A PRIMARY TO SECONDARY LEAK

1.0 PURPOSE

This procedure describes the manner in which Health Physics personnel will monitor and account for the release of radioactivity to the environment due to a primary to secondary leak.

2.0 REFERENCES

2.1 10CFR20

2.2 10CFR50

2.3 CNS Technical Specifications

2.4 HP/0/B/1001/02 - Sample Preparation for Counting Room Equipment

2.5 HP/0/B/1001/12 - Gaseous Waste Sampling and Analysis

2.6 HP/0/B/1001/13 - Liquid Waste Sampling and Analysis

2.7 HP/0/B/1009/11 - EMF Loss

2.8 HP/0/B/1004/04 - Request for Liquid Radioactive Waste Release

2.9 HP/0/B/1004/05 - Request for Gaseous Waste Release

3.0 LIMITS AND PRECAUTIONS

3.1 Insure that all controlled releases are within limits required in references 2.1, 2.2, and 2.3.

3.2 Sampling and batch releases shall be terminated when radioactivity identified in two consecutive samples is below 10CFR20 limits and counted to the lower limit of detection (LLD) for principal gamma emitters listed in Technical Specifications Table 4.11-1 and secondary activities have fallen below levels set in Section 4.0 of this procedure.

4.0 PROCEDURE

4.1 Upon notification that the Condensate Steam Air Ejectors (C.S.A.E.) off gas-EMF #33 has alarmed indicating a primary/secondary leak:

4.1.1 The Health Physics Shift Technician on duty shall initiate the C.S.A.E Sample Log (See Sample Enclosure 5.1) and the Turbine Building Sump Sample Log (See Sample Enclosure 5.2). This form shall continue to be used until terminated under the direction of the station Health Physicist when requirements in 3.2 are met, unless the indicated activity is due to EMF malfunction.

4.1.2 The Health Physics Shift Technician on duty shall collect a 3500 ml liquid sample from the T.B. sump and a 4400 ml gaseous sample from the C.S.A.E. using new Marinelli beakers. The samples shall then be submitted to the Counting Room per references 2.5 and 2.6 for analysis.

4.1.3 If the sample results find no net radioactivity above background, refer to reference 2.7.

4.1.4 If the C.S.A.E. sample results indicate net radioactivity above background, but the T.B. sump EMF 31 does not alarm and activity is below 10CFR20, Appendix B, Table II, Column II limits, sampling frequency shall be as stated for the following secondary side radioactivity levels. Notify Operations and Chemistry per C.S.A.E Sample Log (Sample Enclosure 5.1).

4.1.4.1 When secondary side activity samples range between .005 µCi/gm and .01 µCi/gm of the I-131 equivalence, C.S.A.E. samples shall be collected once every eight (8) hours, and T.B. sump samples shall be collected once every twenty-four (24) hours.

4.1.4.2 When secondary side activity samples are greater than .01 µCi/gm but less than or equal to .03 µCi/gm of the I-131 equivalency, then the C.S.A.E. samples shall be collected once every eight (8) hours, and the T.B. sump samples shall be collected once every twelve (12) hours.

4.1.4.3 When secondary side activity samples are greater than .03 µCi/gm of the I-131 equivalency, the C.S.A.E. samples shall be collected once every four (4) hours and the T.B. sump sample shall be collected once every eight (8) hours.

4.1.5 If the C.S.A.E. sample results exceed 10CFR20, Appendix B, Table II, Column I limits, the Health Physics Shift Technician on duty shall initiate reference 2.9.

4.2 Upon notification that the T.B. sump - EMF 31 has alarmed, indicating a primary/secondary leak:

6.2.7 Open valve "I" and fill the 50 ml nalgene sample bottle labeled "DILUTION WATER SAMPLE". Then, close the valve.

6.2.8 After returning to the outer room, record the "On Contact" liquid and gas radiation readings on Enclosure 8.2. (Omit during periodic testing).

6.2.9 If this is the last sample to be collected this trip, take the samples to the Hot Lab in the sample carrier and place in an operating fume hood behind a lead brick shield to await analysis. However, if another sample is to be collected, call Technician #1 at the Hot Lab and have him come down and transport the samples and the completed portion of Enclosure 8.2 up to the lab. Then proceed with Section 6.2.10 to begin the collection of a second sample.

One of the sample hoods in the Hot Lab should be designated specifically for sample storage. Lead bricks should line the front of the sample hood so that samples may be placed behind them.

6.2.10 In order to begin the process of collecting a second sample perform Steps 3.2.4 and 3.2.9.

6.2.11 Attach new liquid and gas samplers on the side of the PALS panel. New samplers are located in the PALS drawer.

6.2.12 Begin at Step 4.2, Panel Prep. and repeat the procedure for the new sample point.

7.0 SAMPLE ANALYSIS

7.1 Initial Conditions (Technician #1)

7.1.1 A fume hood in the Hot Lab is prepared to accept a post-accident sample: (1) the ventilation fan is on and (2) Lead bricks line the front of the panel.

7.1.2 Two 5cc lockable sample syringes have been verified workable and evacuated.

7.1.3 A 5cc vial has been evacuated and placed in the fume hood.

7.1.4 A clean 50 ml nalgene sample bottle has been placed in the sample hood.

7.1.5 Reagents to run CP/O/A/8100/55 have been prepared and standards have been run.

7.1.6 The Gas Chromatograph has been started up and standardized per CP/O/A/8100/48, Chemistry Procedure for the Determination of Stripped Gas by G. C.

7.2 Stripped Gas Samples

CAUTION: Perform all actions involving the transfer, preparation, or analysis of the gas sample under the fume hood.

7.2.1 Inject a lockable 5cc syringe into the gas sampler and withdraw 1cc of sample. While still under the fume hood, inject the sample into an evacuated 5cc vial.

7.2.2 Double bag the vial. Seal tightly. Prepare a label for the bag as follows:

"Gas Sample Name _____
Initials _____
Date _____
Actual Sample Time _____
Sample Volume _____"

The "Gas Sample Name" and "Actual Sample Time" may be obtained from the gas sampler label. Calculate the actual sample volume as follows:

$$\text{Sample Volume} = \frac{110\ \text{ml}}{260\ \text{ml}} \times 1\ \text{ml} = .42\ \text{ml}$$

Where: 110 ml = liquid tank volume (including tubing)
260 ml = gas tank volume (including tubing)
1 ml = sample volume injected into vial

Complete the Sample Requisition Form using the sample volume calculated above to fill in the "Sample Volume" blank on the form. This will allow Health Physics to adjust isotopic activities from diluted samples to reflect reactor coolant activity.

7.2.3 Using a sample carrier, transport the sample to the Health Physics Count Room, or elsewhere for gamma spectral analysis.

7.2.4 Inject a lockable 5cc syringe into the gas sampler and withdraw 5cc of sample. Lock the syringe.

7.2.5 Analyze the 5cc sample of stripped gas per CP/0/B/8100/48.

No averaging of gas samples will be done as in the procedure as only one syringe will be injected into the Gas Chromatograph.

Results as follows:

$$\%H2 \times \frac{260\ \text{cc}}{.11\ \text{kg}} \times \frac{1}{100} = \%H2 \times 24 = \text{cc/kg } H2$$

Where: % gas is determined via CP/0/B/8100/48.

260 cc: total volume of Gas Tank and tubing

.11 kg: reactor coolant sample size in liquid tank and tubing
1/100: conversion of % to decimal

Report the O_2 results as follows:

$$\%\ O_2 \times \frac{33800\ ppb}{\%O_2} = \text{Dissolved Oxygen in liquid (ppb)}$$

Where: 33800ppb/% O_2 is a conversion factor derived from

$$\frac{.01}{1\%\ O_2} \times (0.26\ell) \times \frac{mole}{22.4\ell} \times \frac{32.0g}{mole} \times \frac{1}{(.11\ell)} \times \frac{1000mg}{g} \times \frac{1000ppb}{ppm}$$

Record the results on Enclosure 8.2.

7.3 Liquid Sample

CAUTION: Perform all actions involving the transfer, preparation, or analysis of the liquid sample in the fume hood.

7.3.1 Take 5 cc of liquid sample and prepare for analysis per CP/0/A/8200/04, Chemistry Procedure for the Determination of Gamma Isotopic Activity. Dilute 5 cc in a 30 cc bottle per the procedure. Report the actual sample volume being counted on the sample requisition form under "Sample Volume" and submit to Health Physics so that the appropriate adjustment of isotopic activities occurs. The calculation is as follows:

$$\text{Sample Volume} = 1/10 \times \frac{5\ ml \times 5\ cc}{\text{Total Dilution Volume}}$$

Where: 5 ml = Reactor Coolant Volume diluted by the PALS.

Total Dilution Volume = #12, Enclosure 8.2 (Dilution Water Added) + 5 ml

1/10 = Dilution Ratio from 5 cc in a 50 ml bottle

5 cc = Diluted Sample Volume

Double bag the vial. Seal tightly. Prepare a label for the bag as follows:

"LIQUID SAMPLE NAME _____
INITIALS _____
DATE _____
ACTUAL SAMPLE TIME _____
SAMPLE VOLUME _____"

The "LIQUID SAMPLE NAME" and "ACTUAL SAMPLE TIME" can be obtained from the liquid sampler label. The "SAMPLE VOLUME" was calculated above.

7.3.2 Take 5 ml of liquid sample and analyze for Boron per CP/0/A/8100/55. The value received must be corrected for dilution as follows:

First, calculate the dilution factor:

$$\text{Dilution Factor} = \frac{\text{Total Dilution Volume}}{\text{Reactor Coolant Sample Volume}}$$

Where: Total Dilution Volume = (Dilution water added per Part I, #12, Enclosure 8.2) + 5 ml

REACTOR COOLANT SAMPLE VOLUME = 5 ml

Then, multiply the ppm BORON MEASURED, ie. the value obtained per CP/0/A/8100/55 by the Dilution Factor to obtain the ppm Boron in the Reactor Coolant.

ppm BORON IN THE REACTOR COOLANT =

ppm BORON MEASURED X DILUTION FACTOR

Fill in the "Dilution Factor" and "Boron Concentration" blanks on Enclosure 8.2.

7.3.3 Chloride analysis

CAUTION: Perform all actions which involve the transfer of the liquid sample to another container under the fume hood.

7.3.3.1 Contact the Station Chemist at the TSC (#2531). Ask him to contact the General Office personnel (at the Crisis Management Center during an accident situation). Inform them that a post-accident liquid sample is to be transported to the Physical Sciences Building for chloride analysis on the ion-chromatograph. They should contact A. M. Deak for workload clearance. Also, ask the Station Chemist to fill out a Chemical Sciences Analysis Request Form, Enclosure 8.9 for the sample.

7.3.3.2 A hard copy of the gamma spectrum and tritium data as well as the sample volume should be transferred to the Physical Sciences Building Radiation Protection Officer (J. S. Isaacson) or her designee. A telecopy can be sent to the Technical Training Center.

7.3.3.3 Tranfer 20 ml ± 5 ml of sample from the liquid sample to a 50 ml nalgene bottle.

7.3.3.4 Double bag the bottle. Seal tightly. Label the bag as follows:

"LIQUID SAMPLE NAME _____
INTIAL _____
DATE _____
ACTUAL SAMPLE TIME _____
DILUTION FACTOR _____"

The "ACTUAL SAMPLE TIME" and "DILUTION FACTOR" may be obtained from Enclosure 8.2. Place the bag in a shielded container for transport.

7.3.3.5 Once the sample shipment has been authorized by the Radiation Protection Officer, the sample shipment should be sent to the Physical Sciences Building in care of the Radiation Protection Officer. The dilution water sample obtained in Step 6.2.7 should also be sent for analysis at this time.

7.3.3.6 When the sample results are obtained record the results on Enclosure 8.2.

7.4 If the dilution proves inadequate for any of the above procedures contact the Station Chemist or his designee.

7.5 Report all results in the Primary Chemistry Legal Log. In an accident situation results should be relayed by phone to the Station Chemist at the TSC as soon as possible. Phone number, 2531.

7.6 Clean the liquid and gas samplers under the fume hood: Remove and replace the septum in the gas sampler. Flush the liquid sampler with Super Q water.

7.7 With Enclosure 8.2 in a plastic bag, exit the Auxiliary Building. Check out through the Operation's Support Center.

7.8 Transport Enclosure 8.2 to the Station Chemist at the TSC.

8.0 ENCLOSURES

8.1 Initial Conditions Checklist

8.2 PALS Data Sheet

8.3 Valve Alignment

8.4 Correction of Dilution Volume

8.5 PALS Control Panel Layout

8.6 Valve Sequence Table

8.7 General Information

8.8 Operation's Supply Valves to the PALS Valve Alignment

8.9 Chemical Sciences Analysis Request Form

ENCLOSURE 8.1
OP/0/A/6200/21

INITIAL CONDITIONS CHECKLIST

Date: ____/____/____

PART I. (Verifying the System's Ability to Function) Initial/Date

1. Verify that the Post Accident Liquid Sampling System Periodic Test, PT/1/A/4208/08 is current prior to sampling. ____/____

PART II. (Interfacing Groups) Initial/Date

1. Contact Operations (complete at TSC).

   (a) If this is an accident situation, the containment should have been isolated by an ST signal. Verify that the signal has been cleared. ____/____

   Initial/Date

   CAUTION: Warn Operations not to open any sample lines until Chemistry has realigned valves in the NM lab. Opening containment isolation sample valves too early could increase radiation levels in the NM lab.

   (b) Request permission to open the desired valves out of the list below. Place a check beside the sample point(s) to be used. ____/____

NC Hot Leg A	Unit 1	Unit 2	Check
Hot Leg Smpl Hdr Cont Isol	1NM26B	2NM26B	
Hot Leg A Smpl Cont Isol	1NM22A	2NM22A	_____
NC Hot Leg C			
Hot Leg Smpl Hdr Cont Isol	1NM26B	2NM26B	
Hot Leg C Smpl Cont Isol	1NM25A	2NM25A	_____
ND Pump 1A Discharge	**Unit 1**	**Unit 2**	
*ND Pump 1A Disch Smpl Line Isol	1NM39	2NM39	_____
ND Pump 1B Discharge	**Unit 1**	**Unit 2**	
*ND Pump 1B Disch Smpl Line Isol	1NM40	2NM40	_____

*Verify with Operations that the respective A or B Train is in service.

Initial/Time

   (c) Verify with Operations that 1KC Essential Supply Header "1A" is in operation for Unit 1 Sampling. For Unit 2: 2KC "2A" is required. ____/____

ENCLOSURE 8.1
OP/0/A/6200/21

INITIAL CONDITIONS CHECKLIST

Date: ____/____/____

Initial/Time

(d) Request permission to open or to have an operator open the following Operations valves in order to provide cooling water flow to the panel. These valves are locked closed. The keys should be obtained prior to proceeding to the panel. ____/____

	Unit 1	Unit 2
Post Accident Liquid Sample Panel Hx Inlet	1KCA8	2KCA8
Post Accident Liquid Sample Panel Hx Outlet	1KCA10	2KCA10

(e) Verify Power Panel Boards 1KXPA and 1KXPB are energized for Unit 1 Sampling. (Unit 2 Later) ____/____

2. Contact Radwaste Chemistry (Complete at TSC). Initial/Date

Notify Radwaste Chemistry that the PALS panel will be operated. Waste Liquid from the panel is pumped to WEFT Sump "A". ____/____

3. Contact Health Physics (Complete at TSC) Initial/Date

(a) Request Health Physic's Coverage for obtaining a post-accident liquid sample. ____/____

Initial/Date

(b) Verify Health Physic's ability to count a sample in the Count Room or elsewhere. ____/____

PART III. (Required Equipment) Check

1. Technician #2 should have the following items before departing to the NM lab:

(a) The PALS panel keys (A set of keys are located in the Secondary Supervisor's office and the Cold Lab) _____

(b) A Working Copy of OP/0/A/6200/21 with Enclosure 8.1 completed. _____

(c) A High Radiation Area Key for the NM Lab. _____

(d) A Shielded Sample Carrier _____

Initial/Date

____/____

ENCLOSURE 8.2
OP/0/A/6200/21

PALS DATA SHEET

(Circle One)
NC Loop A - C Data (Page I of II)

Initial/Date
_____/_____

PART I. (Complete at Control Panel)		TIME
1. pH meter standardized		_____
2. Radiation Field (Background)	____ mR/hr	_____
3. Time sample purge started.		_____
4. Minutes required for stabilization of temperature. (Estimated sample travel time)	_____ mins.	_____
5. Sample Temperature: Tc1	_____ °C	_____
6. Cooling Water Temperature: Tc2	_____ °C	_____
7. Radiation field (with sample flow)	_____ mR/hour	_____
8. Radiation due to sample, (#7) - (#2)	_____ mR/hour	_____
9. Pressure at isolation	_____ psig	_____
10. Time sample purge isolated		_____
11. Actual sample time, (#10) - (#4 minutes)		_____
12. Dilution water added	_____ mls	_____
13. pH of sample	_____	_____
14. Radiation reading after panel flush	_____ mR/hour	_____
15. Radiation reading on contact with samplers. (Omit during Periodic Testing.)	Gas _____ mR/hour Liquid _____ mR/hour	_____ _____

ENCLOSURE 8.2
OP/0/A/6200/21

PALS DATA SHEET

(Circle One)
NC Loop A - C Data (Page II of II)

Initial/Date
_____/_____

PART II. (Complete at Hot Lab) TIME

1. Hydrogen Concentration _____ cc/kg H_2 _____

2. Oxygen Concentration _____ ppb _____

3. Boron Concentration _____ ppm B _____

4. Dilution Factor _____

5. Chloride Concentration _____ ppb Cl^- _____

6. Gamma Spectral Analysis (Gas) (Attach H.P. Data Sheet) _____

7. Gamma Spectral Analysis (Liquid) (Attach H.P. Dat Sheet) _____

In an accident situation, the results from this data sheet should be forwarded to the Station Chemist at the Technical Support Center as soon as possible. TSC phone number - 2531.

Initial/Date

_____/_____

ENCLOSURE 8.2
OP/0/A/6200/21

PALS DATA SHEET

(Circle One)
ND Loop A - B Data (Page I of II)

Initial/Date
_____/_____

PART I. (Complete at Control Panel)		TIME
1. pH meter standardized		_____
2. Radiation Field (Background)	___ mR/hr	_____
3. Time sample purge started.		_____
4. Minutes required for stabilization of temperature. (Estimated sample travel time)	____ mins.	_____
5. Sample Temperature: Tc1	____°C	_____
6. Cooling Water Temperature: Tc2	____°C	_____
7. Radiation field (with sample flow)	____mR/hour	_____
8. Radiation due to sample. (#7) - (#2)	____mR/hour	_____
9. Pressure at isolation	____ psig	_____
10. Time sample purge isolated		_____
11. Actual sample time. (#10) - (#4 minutes)		_____
12. Dilution water added	____mls	_____
13. pH of sample	_____	_____
14. Radiation reading after panel flush	_____mR/hour	____
15. Radiation reading on contact with samplers. (Omit during Periodic Testing.)	Gas _____mR/hour Liquid _____mR/hour	____ ____

ENCLOSURE 8.2
OP/0/A/6200/21

PALS DATA SHEET

(Circle One)
ND Loop A - B Data (Page II of II)

Initial/Date
_____/_____

PART II. (Complete at Hot Lab)

		TIME
1.	Hydrogen Concentration _____ cc/kg H_2	_____
2.	Oxygen Concentration _____ ppb	_____
3.	Boron Concentration _____ ppm B	_____
4.	Dilution Factor _____	
5.	Chloride Concentration _____ ppb Cl^-	_____
6.	Gamma Spectral Analysis (Gas) (Attach H.P. Data Sheet)	_____
7.	Gamma Spectral Analysis (Liquid) (Attach H.P. Data Sheet)	_____

In an accident situation, the results from this data sheet should be forwarded to the Station Chemist at the Technical Support Center as soon as possible. TSC phone number - 2531.

Initial/Date

_____/_____

Form 18768 (R8-81)

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
ENCLOSURE 8.3
OP/0/A/6200/21
VALVE ALIGNMENT

(Unit 1)
LOCATION

VALVE NO.	VALVE NAME	LOCATION	POSITION	INITIAL
1NM342	PASP Demin Supply Flow Meter Influent	AB-543 EE-54 Rm. 238	THROTTLED	
1NM343	PASP Demin. Supply Isol to Smpl Hdr	AB-543 EE-54 Rm. 238	OPEN	
1NM351	PASP Air Eductor Isolation From VI	AB-543 EE-54 Rm. 238	OPEN	
1NM298	Nitrogen Supply to PASP	AB-543 EE-54 Rm. 238	OPEN	
1NM393	PASP Effluent to WEFT Sump A Isol	AB-543 EE-54 Rm. 238	OPEN	
1NM321	PASP Liquid Tank Effluent to WEFT	AB-543 EE-54 Rm. 238	THROTTLED	
1NM334	PASP Calibration Tank Vent to Aux Bldg Exhaust	AB-543 EE-54 Rm. 238	CLOSED	
1NM328	PASP Sample Line Nitrogen Supply Isolation	AB-543 EE-54 Rm. 238	OPEN	
1KCC99	Post Accident Liquid Sample Panel Hx Inlet	AB-543 EE-54 Rm. 238	OPEN	
1NM425	Calibration Tank Drain	AB-543 EE-54 Rm. 238	CLOSED	
1NM424	Nitrogen Inlet Isolation to Liquid Tank	AB-543 EE-54 Rm. 238	OPEN	
1NM-I *	Post Accident Liquid Sample Panel Demin Water Sample	AB-543 EE-54 RM. 238	CLOSED	
1NM-J *	Post Accident Liquid Sample Panel Dilution Flow Sample	AB-543 EE-54 Rm. 238	CLOSED	
1NM-A *	Post Accident Liquid Sample Panel Nitrogen Supply Drain	AB-543-EE-54 Rm. 238	CLOSED	
*	Valves which will be added per NSM CN-10068.			
	Unit 2 Valve Alignment (Later)			

CORRECTION OF DILUTION VOLUME

To correct the dilution volume, divide the radiation reading after panel flush by 3 rem/hr. Then multiply this by the initial dilution volume to obtain the desired dilution volume in Section 4.6.3.

Example:

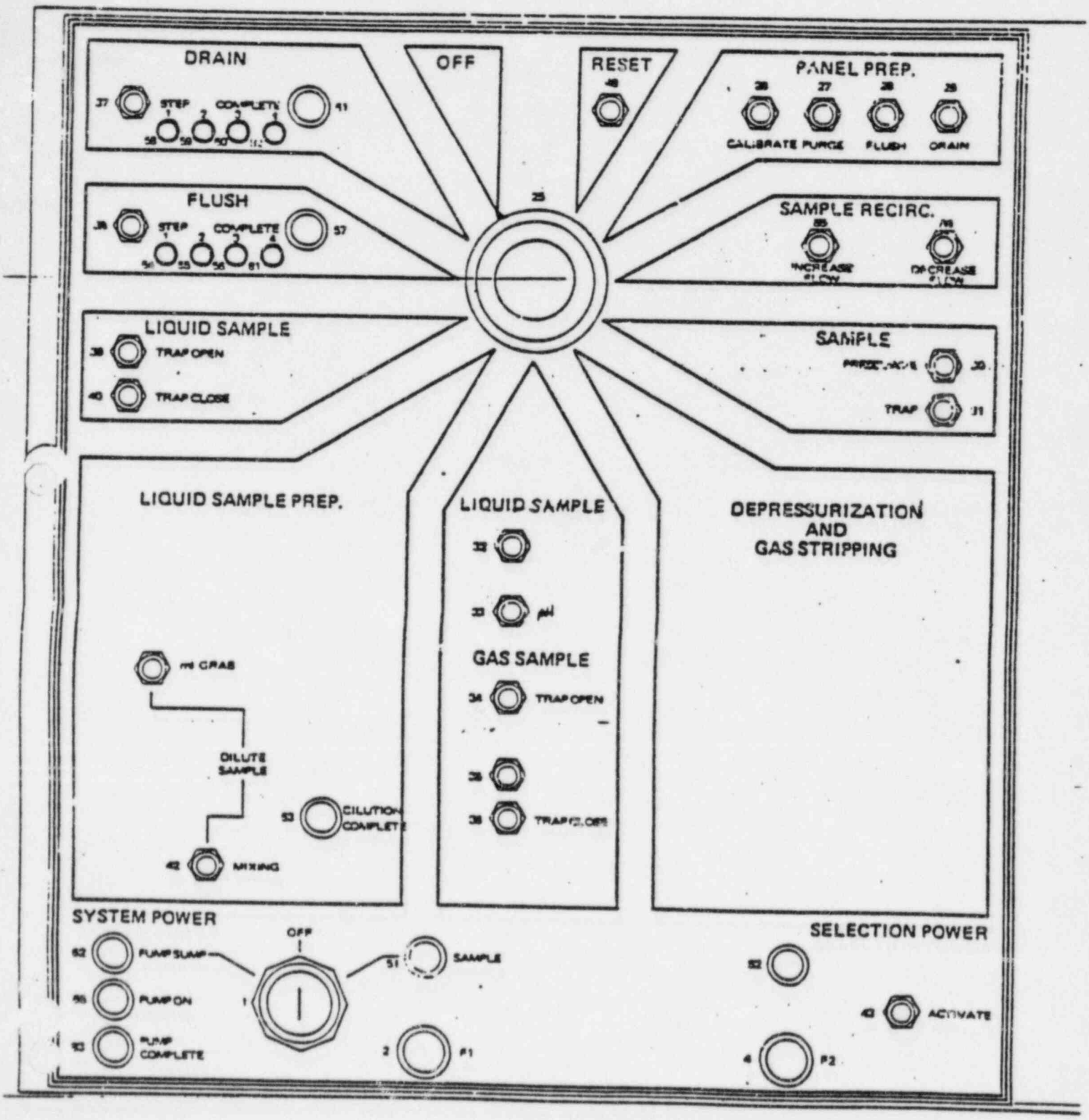
Initial Dilution Volume = 250 ml

Radiation reading after panel flush = 12 rem/hr (12000 mR/hr)

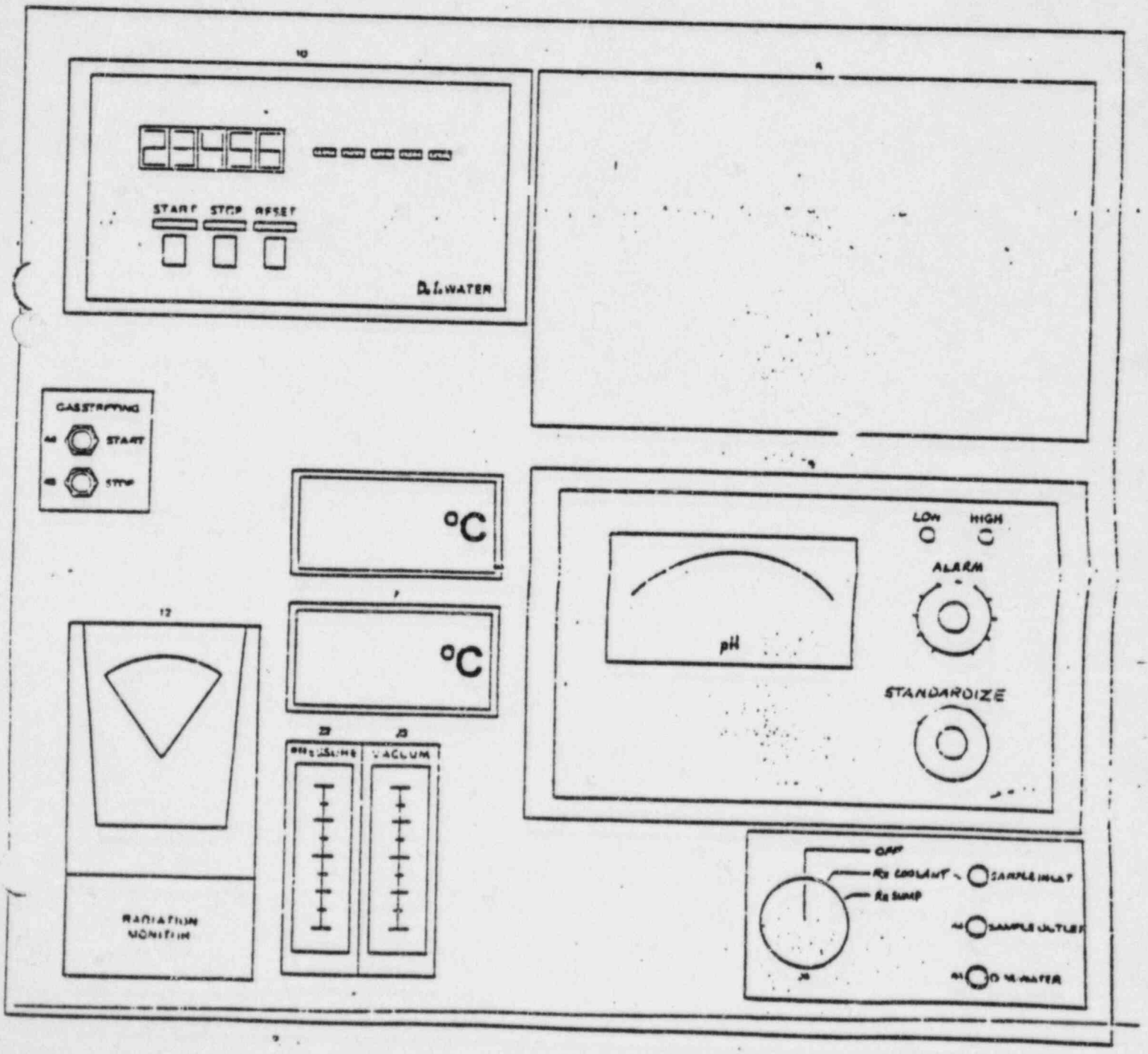
then $\frac{12 \text{ rem/hr}}{3} \times 250 \text{ ml} = 1000 \text{ ml}$

Go back to Section 4.2 and repeat the sample sequence. In Step 4.6.3, use the new dilution volume which was calculated as in the example above.

PALS CONTROL PANEL LAYOUT



PALS CONTROL PANEL LAYOUT



ENCLOSURE 8.6
OP/0/A/6200/21
VALVE SEQUENCE TABLE

Function	Pushbutton Activation	Valves
1.0 Panel Prep		1NM313, 1NM312, 1NM315 1NMSV0311, 1NM311, 1NM310, 1NM314, 1NMSV3201
1.1 Calibrate	H	1NM333, 1NM332
1.2 Purge	H	1NM330, 1NM338, 1NM307, 1NM305
1.3 Flush	H	1NM331, 1NM338, 1NM307, 1NM309
1.4 Drain	H	1NM338, 1NM307, 1NM305
2.0 Sample Recirc.		1KCA9, 1NM294, 1NM324, 1NM319, 1NM313, 1NM312, 1NM315, 1NMSV0311, 1NM314
2.1 Increase	H	Puts air to 1NM320 (1NMSV3201)
2.2 Decrease	H	Vents 1NM320 (1NMSV3200)
3.0 Sample Trap		1KCA9, 1NM294, 1NM324 1NM319, 1NM313, 1NM312 1NMSV0311, 1NM314
3.1 Pressurize	M	$\overline{\text{1NM319}}$
3.2 Trap	M	$\overline{\text{1NM324}}$
4.0 Depressurization		1NM317, 1NM315
4.1 Gas Stripping Start	M	1NM325, 1NM327
4.2 Gas Stripping Stop	M	$\overline{\text{1NM325}}$, $\overline{\text{1NM327}}$
5.0 Liquid Sample		
5.1 Grab Sample	M	1NM318, 1NM325, 1NM329, 1NMSV0336
5.2 D.M. Flow Meter Start	M	1NM341, 1NM346
5.3 D.M. Flow Meter Stop	M	$\overline{\text{1NM341}}$, 1NM346

ENCLOSURE 8.6
CP/0/A/6200/21
VALVE SEQUENCE TABLE

	Function	Pushbutton Activation	Valves
5.4	Mixing	H	1NM340, 1NM346
5.5	pH	M	1NMSV0336
5.6	Trap Open	M	1NM315, 1NM312, 1NMSV0311. 1NM324, 1NM319. 1KCA9, 1NM345, 1NM322
5.7	Trap Close	M	1NM315. 1NM312, 1NMSV0311
6.0	Liquid Sample Prep	-	(Step incorporated into Step 5.0)
7.0	Liquid Sample II		1NM324, 1NM319, 1KCA9, 1NM345, 1NM322. 1NM348 1NMSV0350, 1NM346
7.1	Trap Open	H	1NM319, 1NM346, 1NM309 1NM304, 1NM376
7.2	Trap Close	M	1NMSV0350
8.0	Flush		
8.1	Gas Tank	M	1NM316, 1NM312, 1NM308, 1NM309
8.2	Probes	M	1MN331, 1NM338, 1NM307, 1NM309
8.3	Dilute Tank	M	1NM347, 1NM301, 1NM309
8.4	Liquid Tank	M	1NM331. 1NM329, 1NM325. 1NM319, 1NM322
9.0	Drain		
9.1	Dilute Tank	M	1NM376, 1NM348, 1NM304, 1NM305

ENCLOSURE 8.6
OP/O/A/6200/21
VALVE SEQUENCE TABLE

	Function	Pushbutton Activation	Valves
9.2	Gas Line	M	1NM323, 1NM315, 1NM312, 1NM308, 1NM305
9.3	Gas Tank	M	1NM323, 1NM315, 1NM317, 1NM325, 1NM329, 1NM338, 1NM307, 1NM305
9.4	Probe Refill & System Vent	M	1NM331, 1NM338, 1NM307, 1NM309, 1NM312, 1NM313, 1NM346, 1NM348, 1NM315, 1NMSV3200

LEGEND:

M - Momentarily depressing the button initiates the function.

H - The function will operate as long as the pushbutton is depressed.

$\bar{N}$ - Indicates that the valve is de-energized when the pushbutton is depressed.

ENCLOSURE 8.7
OP/0/A/6200/21

GENERAL INFORMATION

1. PALS Panel Location: Unit 1 - (Room 238, Col. FF-55, AB-543)
   Unit 2 - (Room 248, Col. FF-59, AB-543)

   See page 2 of this enclosure for a general arrangement drawing.

2. Telephone Number at Control Panel - Ext. 2109

3. Breaker Information:

   Unit 1

Fdr. Breaker	Comp/Breaker	Description	Location
1KXPA	#3	Post Accident Sampling Sample Pump and Sol. Vlvs.	AB 554' CC-57
1KXPB	#34	Post Accident Liquid Sampling Control Panel	AB 554 CC-56
*1KXPA	#22	Post Accident Air Sampling Control Panel	AB 554 CC-57

   *The Post Accident Air Sampling Control Panel is under Health Physic's control.

   Unit 2

   (Later)

4. Area Radiation Monitor - 1EMF-2 is located in Room 238.

5. Station Chemist phone number at TSC - 2531.

6. Sample Line Volumes

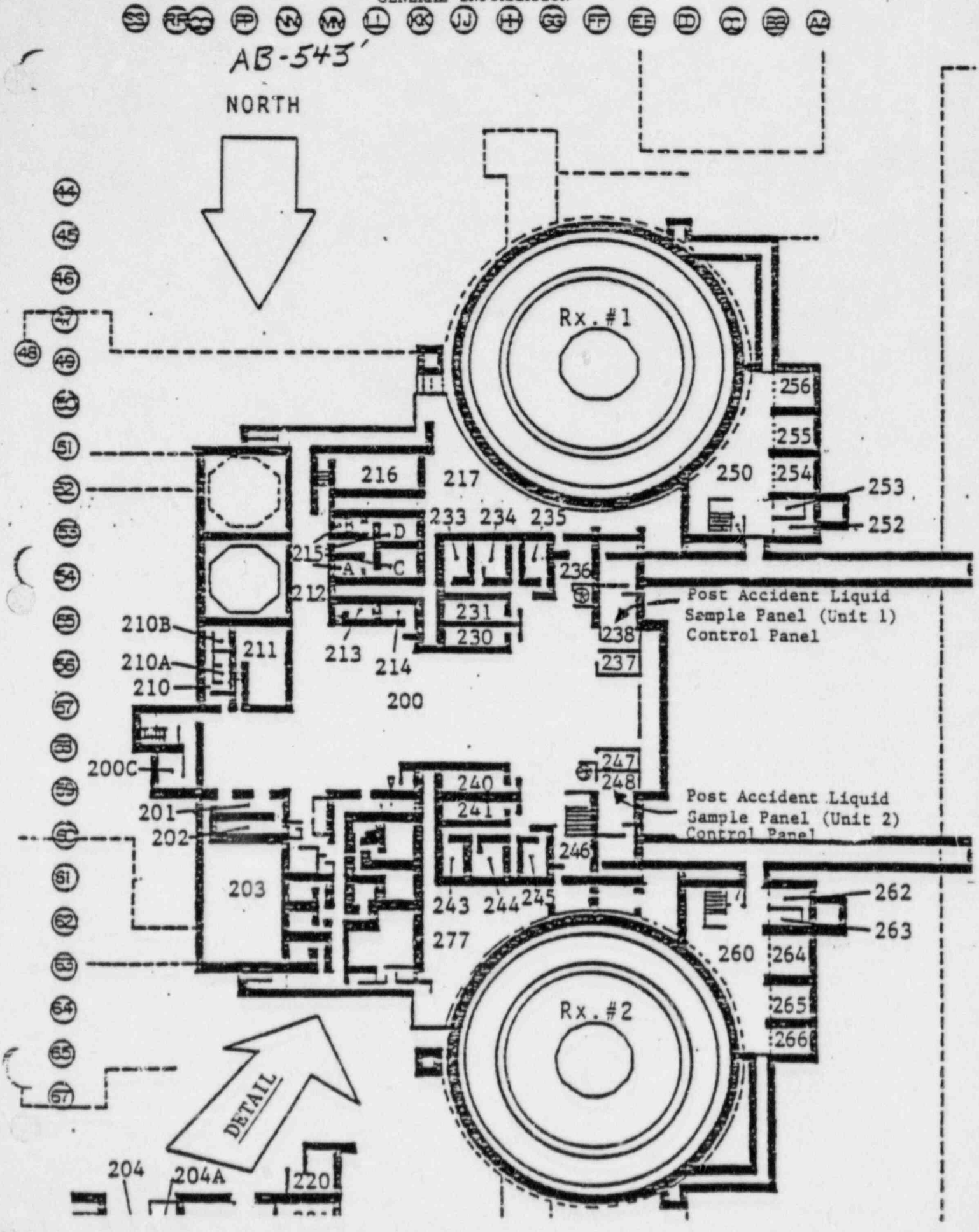
   Unit 1

   NC Loop A to PALS - 9.0 gallons
   NC Loop C to PALS - 7.8 gallons
   ND Loop A to PALS - 10.0 gallons
   ND Loop B to PALS - 13.0 gallons

   Unit 2

   (Later)

AB-543


NORTH
Rx. #1
Rx. #2
DETAIL
Post Accident Liquid Sample Panel (Unit 1) Control Panel
Post Accident Liquid Sample Panel (Unit 2) Control Panel
200
200C
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202
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204
204A
210
210A
210B
211
212
213
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216
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Form 18768 (R8-81)

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
ENCLOSURE 8.8
OP/0/A/6200/21
OPERATION'S SUPPLY VALVES - VALVE ALIGNMENT

VALVE NO.	VALVE NAME	LOCATION	POSITION	INITIAL
	Unit 1 PALS Supply Valves			
1VI230	Root Isol.	AB-553 GG-56 Rm. 200	OPEN	
1VI86	Aux. Bldg. 543 Elev. VI Supply	AB-543 EE-53 Rm. 217	OPEN	
1YM436	Post Accident Unit 1 Sample Isol.	AB-543 FF-54 Rm. 238	OPEN	
1YM256	YM Header Isol	AB-543 FF-54 Rm. 238	OPEN	
1GN110	N_2 to Unit 1 Gas and Liquid Sample Panels Isolation	AB-550 FF-54 Rm. 238	OPEN	
1KCA8	Post Accident Liquid Sample Panel Hx Inlet	AB 546, EE-54 Rm. 238	LOCKED CLOSED	
1KCA10	Post Accident Liquid Sample Panel Hx Outlet	AB 546, EE-54 Rm. 238	LOCKED CLOSED	
	Unit 2 PALS Supply Valves			
2VI402	Liquid Sample Panel Supply Isol.	AB-543	OPEN	
2VI230	Unit 2 Aux. Bldg. Root Isol.	AB-543	OPEN	
2VI86	Aux Bldg 543 Elev. VI Supply	AB-543	OPEN	
1YM437	Post Accident Unit 2 Sample Isol.	AB-543 FF-60 Rm. 248	OPEN	
1YM140	YM Header Isolation	AB-543 FF-57 Rm. 200	OPEN	
1GN111	N_2 to Unit 2 Gas and Liquid Sample Panels Isolation	AB-550 FF-60 Rm. 248	OPEN	
2KCA8	Post Accident Liquid Sample Panel Hx Inlet	AB, 543, EE-FF, 60-61	LOCKED CLOSED	
2KCA10	Post Accident Liquid Sample Panel Hx Outlet	AB, 543 EE-FF, 60-61	LOCKED CLOSED	
	NOTE: The valves listed above all belong to Operations. Contact Operations if a valve is found in an incorrect position.			

Attachment 1.

ENCLOSURE 8.9
OP/0/A/6200/21

DUKE POWER COMPANY - PRODUCTION SUPPORT DEPARTMENT
Chemical Sciences - Analysis Request

Initiator _____ Station/Dept./Phone _____ Request Date _____ Results Reported To _____

Sample Description	Sample		Volume/Wt	Requested Analyses	Exempt Concentrations see 10CFR30.70 Y or N	Shipping Papers Attached Y or N	GeLi Spectrum #	H_3 Activity (if applicable) μCi
	Station #	ChemSci #						

Additional Information (turnaround, accuracy, preservatives _____

PO Acceptance _____ Date _____

Results _____

Request No. _____ Date Received _____ Date Completed _____ Approved By _____

CATAWBA NUCLEAR STATION DIRECTIVE 3.8.4 (TS)

REV. NO. 8 DATE 8-15-84

APPROVAL J. H. Hampton

DUKE POWER COMPANY

CATAWBA NUCLEAR STATION

ONSITE EMERGENCY ORGANIZATION

1.0 PURPOSE

To define the role of the Emergency Coordinator and other members of the Onsite Emergency Organization in implementing the station Emergency Plan and to provide for augmentation of the normal operating shift during an emergency situation.

2.0 REFERENCES

2.1 Catawba Nuclear Station Emergency Plan

2.2 Catawba Nuclear Station Operations Management Procedure 1-8, "Authority and Responsibility of Licensed Reactor Operators and Licensed Senior Reactor Operators"

2.3 Station Directive 2.8.1 (TS) "Reporting Requirements"

2.4 Station Directive 3.0.7 (TS), Site Assembly/Evacuation.

3.0 RESPONSIBILITIES

3.1 Shift Supervisor - All emergencies are initially handled by the Shift Supervisor. The Shift Supervisor on duty will ensure that all immediate actions required by station emergency or abnormal procedures, applicable to the situation, are performed and that all actions necessary for the protection and safety of personnel and property are being taken.

3.2 Emergency Coordinator - The Shift Supervisor shall assume the function of the Emergency Coordinator until the arrival of the Station Manager or his designee at which time the functions of the Emergency Coordinator are transferred to the Station Manager or his designee.

The Shift Supervisor shall then continue to take actions necessary to ensure that the emergency situation is brought under control.

3.3 Recovery Manager - The responsibilities of the Emergency Coordinator will be assumed by the Recovery Manager at the Crisis Management Center (CMC) as this organization is staffed and ready to assume its

function. This assumption of the Emergency Coordinator functions by the Recovery Manager, will take place for the Alert, Site Emergency and General Emergency classifications.

The Emergency Coordinator shall continue to take actions necessary to ensure that the emergency situation is brought under control and shall coordinate activities between the station and the CMC.

4.0 DUTIES

4.1 Shift Supervisor/Emergency Coordinator - immediate duties include the following:

4.1.1 Determine from the initiating conditions what Emergency Class the Station is in.

4.1.2 Declare the Emergency as necessary and assume control as the Emergency Coordinator.

4.1.3 Assign someone from the shift to begin the notifications as per applicable procedure.

4.1.4 Take necessary on-site remedial actions.

4.1.5 Initiate activitation of the Technical Support Center and Operations Support Center.

4.1.6 Providing protective action recommendations to authorities responsible for implementing offsite emergency measures.

NOTE: This authority and responsibility shall not be delegated to other elements of the station emergency organization.

4.2 Station Manager/Emergency Coordinator - relieves the Shift Supervisor of the Emergency Coordinator's duties and assumes the responsibility for implementing the station Emergency Plan including:

4.2.1 Staffing the Technical Support Center and Operations Support Center with those personnel deemed necessary to effectively assess the emergency condition.

4.2.2 Instituting those procedures necessary to allow the Control Room to gain immediate control of the emergency situation.

4.2.3 Notification and activation of Crisis Management Team, county and state organizations and the Nuclear Regulatory Commission.

4.2.4 Providing protective action recommendations to authorities responsible for implementing off-site emergency measures.

NOTE: This authority and responsibility shall not be delegated to other elements of the station emergency organization.

4.2.5 Continued maintenance of an adequate state of emergency preparedness until the emergency situation has been effectively managed and the station is returned to a normal or safe operating condition.

4.3 Technical Support Center Staff - The Technical Support Center (TSC), location shown in Enclosure 4, will be activated and staffed to support the control room and coordinate emergency and/or recovery efforts with offsite groups, corporate headquarters, state and local government and the NRC. The station operating staff is used as the TSC staff in the emergency situation as deemed necessary by the Emergency Coordinator. Individuals with a TSC function will have a routine function that is similar to their role in an emergency.

4.3.1 Operations Group:

A. The Superintendent of Operations when designated, shall assume the duties of the Station Manager. He will provide expertise to the Station Manager and the Shift Supervisor regarding solutions to operational problems. He shall ensure that each operating shift is manned with competent personnel trained and prepared to manage all emergency situations, and he shall augment his personnel resorces as necessary to accomplish this goal. He shall provide technical expertise to other members of the TSC and shall work closely with the Superintendent of Maintenance in restoring station equipment to an operational status during and after the emergency condition. This individual shall be the first alternate to the Emergency Coordinator in the event the Station Manager is unavailable.

B. The Operating Engineer shall assume the duties of the Superintendent of Operations when so designated. He will provide technical expertise to the Superintendent of Operations and other members of the TSC as required and maintain contact with Operations personnel in the Control Room.

C. The Assistant Operating Engineer shall assume the duties of the Operating Engineer when so designated. He will provide technical expertise to the Superintendent of Operations, the Operating Engineer and other members of the TSC as required and maintain contact with the Operations personnel stationed in the Operations Support Center (OSC).

4.3.2 Technical Services Group:

A. The Superintendent of Technical Services shall assume the duties of the Station Manager when so designated. He will provide expertise to the Station Manager and the Shift Supervisor (via the Operating Engineer) regarding solutions to operational problems. He shall provide technical expertise to other members of the TSC in the areas of Health Physics, Chemistry, Performance and Reactor Engineering and in Licensing and Engineering support programs. He shall ensure that all areas of responsibility under his direction are staffed with competent personnel, properly trained and prepared to support any operational emergency condition. This individual shall be the second alternate to the Emergency Coordinator in the event the Station Manager is unavailable.

B. The Health Physics Section of the TSC

1. The Station Health Physicist shall assume the duties of the Superintendent of Technical Services when so designated. He will provide technical expertise to the Superintendent of Technical Services, the Station Manager and other members of the TSC as required. He will provide for the calculation and distributin of off-site dose determinations for releases of radioactive materials to the atmosphere and make recommendations to the Station Manager through the Superintendent of Technical Services on Protective Actions necessary for limiting exposure to station personnel and members of the public. The Station Health Physicist shall also work closely with the appropriate members of the Crisis Management Center to assure that radiological hazards during any emergency situations are minimized. The Station Health Physicist shall ensure that all areas under his direction are staffed and prepared to manage Health Physics support for any emergency condition.

2. Health Physics S&C Coordinator shall coordinate and direct the actions of in plant radiological monitoring teams and provide data on plant radiological status.

3. H. P. Support Coordinator shall direct the actions of the remainder of the Health Physics functions.

4. Data Analysis Coordinator shall provide for the calculation and distribution of Off-site Dose projections and field monitoring information

assessable by Health Physics personnel and relay this to the Station Health Physicist.

The Data Analysis Coordinator shall also direct the Field Monitoring Coordinator as necessary to evaluate dose projects versus field data.

5. Field Monitoring Coordinator shall direct the actions of the field monitoring teams in gathering both on-site and off-site radiological data and make this information available to the Data Analysis Coordinator or Station Health Physicist. Constant communications will be maintained by a Radio Operator or by the use of plant or commercial telephone lines to the field teams.

C. The Station Chemist shall assume the duties of the Superintendent of Technical Services when so designated. He will provide technical expertise to the Superintendent of Technical Services and to other members of the TSC as required. He is responsible for coordinating chemical technical support and for initiating necessary action to ensure adequate chemical sampling and evaluation to support the emergency condition. The Station Chemist shall ensure that all areas under his direction are staffed and prepared to manage Chemistry support for any emergency condition.

D. The Performance Engineer shall assume the duties of the Superintendent of Technical Services when so designated. He will provide technical expertise to the Superintendent of Technical Services and to other members of the TSC as required. He will assure that adequate levels of technical and engineering manpower are available to: manage test procedure review, carryout special test procedures, insure control and accountability of special nuclear materials, and evaluate plant and reactor performance. A Test Engineer shall assist the Performance Engineer in the evaluation of plant systems and transmission of information to the CMC. A Performance Technician(s) will operate the TSC Operator Aid Computer Terminal to post and update plant status. This information will be transmitted through the VAX computer to other users. The Performance Engineer shall ensure that all areas under his supervision are staffed and prepared to manage Performance support for any emergency condition.

E. The Reactor Engineer shall assume the duties of the Performance Engineer when so designated. He will provide technical expertise to the Performance

Engineer and to other members of the TSC as required. The Reactor Engineer shall ensure that all areas under his direction are staffed and prepared to manage technical support for any emergency condition.

F. The Licensing and Projects Engineer shall assume the duties of the Superintendent of Technical Services when so designated. He will provide technical expertise to the superintendent of Technical Services and to the members of the TSC as required. He is responsible for coordinating station activities with regulating agencies, coordinating the reporting and investigation of all incidents and for providing review of appropriate station technical matters. The License and Projects Engineer shall ensure that all areas under his direction are staffed and prepared to manage technical support for any emergency condition.

G. TSC Logkeeper shall record events that occur from the time of activation of the TSC and shall be directed by the Emergency Coordinator. This individual will be an engineer from the station's Projects group.

H. Offsite Communicator shall make followup notifications to State and/or County EOC's. The Offsite Communicator will proceed to the Control Room when the TSC is activated to assist with notifications until the Station Manager assumes duties of the Emergency Coordinator. This individual shall be an engineer from the Station's Licensing and Projects Group.

4.3.3 Station Services Group:

A. The Superintendent of Station Services when designated shall assume the duties of the Station Manager. He will provide techical expertise to the Station Manager and to the Shift Supervisor (via the Operating Engineer) regarding solutions to administrative problems associated with emergency conditions at the station. He shall provide technical expertise to other members of the TSC in the area of Contract Services, Security, Training and Safety, and Administrative Coordination. He shall ensure that all areas under his direction are staffed and prepared to manage administrative support for any emergency condition. This individual shall be the fourth alternate to the Emergency Coordinator in the event the Station Manager is unavailable.

B. The Security and Contract Coordinator shall assume the duties of the Superintendent of Station Services when so designated. He will provide technical expertise to the Superintendent of Station Services and to other

members of the TSC as required. He is responsible for coordinating Security and Contract Services for the station. The Security Chief shall ensure that all areas under his direction are staffed and prepared to manage Security and Contract Services for any emergency condition.

C. The Administrative Coordinator shall assume the duties of the Superintendent of Station Services when so designated. She will provide technical expertise to the Superintendent of Station Services and to other members of the TSC as required. She is responsible for coordinating and maintaining general adminstrative functions and for contacting the TSC clerk(s) as needed. The Administrative Coordinator shall ensure that all areas under her direction are staffed and prepared to manage administrative functions during any emergency condition.

D. The Training and Safety Coordinator shall assume the duties of the Superintendent of Station Services when so designated. She will provide technical expertise to the Superintendent of Station Services and to other members of the TSC as required. She is responsible for coordinating the station training and safety activities, Fire Protection and Medical Services in support of the emergency organization. The Training and Safety Coordinator shall ensure that all areas under her direction are staffed and prepared to provide needed training and safety evaluations during any emergency condition.

4.3.4 Maintenance Group:

A. The Superintendent of Maintenance when designated, shall assume the duties of the Station Manager. He will provide technical expertise to the Station Manager and the Superintendent of Operations regarding solutions to operational problems. He shall provide technical expertise to other members of the TSC in areas of Mechanical Maintenance, Planning, Instrument and Electrical Maintenance, and Materials Support. He will insure that all areas of responsibility under his direction are staffed with competent personnel properly trained and prepared to support any operational emergency condition. This individual shall be the third alternate to the Emergency Coordinator in the event the Station Manager is unavailable.

B. The Mechanical Maintenance Engineer shall assume the duties of the Superintendent of Maintenance when so designated. He will provide technical expertise to the Superintendent of Maintenance and to other members

of the TSC as required. He is responsible for preventative and actual maintenance for all station mechanical equipment and facilities. The Mechanical Maintenance Engineer shall insure that all areas under his direction are staffed and prepared to manage maintenance support for any emergency condition.

C. The Planning Engineer shall assume the duties of the Superintendent of Maintenance when so designated. He will provide technical expertise to the Superintendent of Maintenance and to other members of the TSC as required. He is responsible for the implementation and evaluation of the maintenance management program and for the administration of the materials procurement program. The Planning Engineer shall insure that all areas under his direction are staffed and prepared to manage planning and materials support for any emergency condition.

D. The Instrument and Electrical Engineer shall assume the duties of the Superintendent of Maintenance when so designated. He will provide technical expertise to the Superintendent of Maintenance and to other members of the TSC as required. He is responsible for maintaining all station I&E equipment in an operational state. The I&E Engineer will be the station contact with the Transmission Department personnel in the event of loss of offsite power. The Instrument and Electrical Engineer shall ensure that all areas under his direction are staffed and prepared to manage I&E support for any emergency condition.

4.4 Operations Support Center Staff

4.4.1 The Operations Support Center (OSC), location shown in Enclosure 5, shall be activated by the Emergency Coordinator in accordance with the applicable Emergency Procedure. The O.S.C. will be staffed and organized as per Enclosure (3) or as deemed necessary by the Shift Supervisor or Station Manager. Those personnel assigned to the O.S.C. shall be under the direct supervision of a Shift Supervisor designated by the Emergency Coordinator.

4.4.2 The Operations Support Center shall include as a minimum the following personnel:

A. Operations: Operators on shift who are not actually assigned to the control room and additional operations people on site or called out as required by the Shift Supervisor or Station Manager.

B. Health Physics: A Health Physics Supervisor and five technicians as deemed necessary by the Station Health Physicist. The Health Physics Supervisor shall work

closely with the Shift Supervisor in charge and shall maintain contact with the HP S&C Coordinator in the TSC.

C. Other station groups as necessary.

4.4.3 In the event that the Operations Support Center becomes environmentally uninhabitable due to radiological or other conditions, the OSC shall move to the rear of the Control Room or to other facilities as applicable.

5.0 ACTIVATION OF EMERGENCY ORGANIZATION

5.1 Phased Activation of T.S.C. Organization

5.1.1 Selected station personnel are notified of situations classified as Unusual Events by Emergency Response Procedure, RP/0/A/5000/02. These individuals shall then respond as appropriate and shall notify any additional personnel in their organization to respond as needed. At the Alert class or greater TSC activation is required, either full or partial as deemed necessary by the Station Manager.

5.1.2 To effectively respond to an emergency situation and to avoid unnecessary personnel from being activated, the TSC is divided into a Phase I and II organization, with other TSC personnel as needed. The Station Manager may activate Phase I separately or both Phase I and II jointly (Phase II is never activated without prior activation of Phase I).

5.1.3 See Enclosure 6 for Notification Mechanism.

5.2 Phase I of the Technical Support Center

5.2.1 Phase I of the Technical Support Center organization shall be staffed and organized as indicated below or as deemed necessary by the Station Manager.

NOTE: See Enclosure (1) for TSC organization.

5.2.2 Personnel assigned to Phase I of TSC shall be capable of supplementing the on-shift Emergency Response within 30 to 45 minutes of notification.

A. The Station Manager/Emergency Coordinator
B. Group Superintendents
C. Station Health Physicist
D. Performance Engineer
E. Instrument and Electrical Engineer
F. Offsite Communicator
G. Fielding Monitoring Coordinator
H. Data Analysis Coordinator
I. S & C Coordinator

J. HP Support Coordinator
K. Test Engineer

5.2.3 In the event that the Technical Support Center becomes environmentally uninhabitable due to radiological or other conditions and the Control Room remains secure (habitable), Phase I of the T.S.C. shall move inside the Control Room area. In the event the Control Room also becomes uninhabitable due to radiological or other conditions, Phase I of the T.S.C. shall move to the Administration Building or to other facilities as applicable.

5.3 Phase II of the Technical Support Center

5.3.1 Phase II of the Technical Support Center organization shall be staffed and organized as indicated below or as deemed necessary by the Station Manager.

A. Operating Engineer
B. Assistant Operating Engineer
C. The Station Chemist
D. The Reactor Engineer
E. Performance Technician(s)
F. The Licensing & Projects Engineer
G. The Mechanical Maintenance Engineer
H. The Security & Contract Coordinator
I. The Training and Safety Coordinator

5.3.2 Personnel assigned to Phase II of TSC shall be capable of supplementing the on-shift Emergency Response within 45 to 75 minutes of notification.

5.3.3 In the event that the Technical Support Center becomes environmentally uninhabitable due to radiological or other conditions, Phase II of the T.S.C. shall move to the Administration Building or to other facilities as applicable, when directed by the Station Manager.

5.4 Site Evacuation

5.4.1 At the Site Area Emergency class, Group Superintendents shall develop a list of all essential personnel that will remain onsite.

5.4.2 Health Physics shall determine the habitability of the TSC & Control Room for the protection of station personnel remaining onsite after the Site Evacuation.

5.5 Other TSC Personnel

5.5.1 Full activation of the TSC is as shown in Enclosure (1). Other personnel not specified as part of the Phase I and II staff but still necessary for TSC are as indicated below:

A. The Administrative Coordinator
B. The Planning Engineer
C. Clerks as needed, determined by Group Superintendents
D. TSC Logkeeper
E. Radio Operator

5.6 OSC Notification

5.6.1 Operations personnel will be notified by the Operation's Duty Engineer or someone designated either by station phone or home phone as required.

5.6.2 Health Physics personnel will be notified by the Station Health Physicist either by station phone or home phone as required.

6.0 EMERGENCY ORGANIZATION SUPPORT

6.1 Clerical assistance for the Station Manager and the four station superintendents will be provided by one of their normally assigned clerks. Notification of this individual will be made by the Administrative Coordinator.

6.2 Food and beverage will be supplied to the TSC and OSC as appropriate for the time of day. After initial staffing of the TSC and OSC, coffee and snack material will be provided by the Administrative group.

6.3 Station Fire Brigade

6.3.1 The fire brigade will have its normal functions of fire fighting in an emergency situation as needed.

6.3.2 In the event of an emergency requiring activation of the Technical Support Center Phase I & II, the Station Fire Chief or his designee shall make frequent reports to the Training and Safety Coordinator regarding the status of any fires.

6.3.3 The Station Fire Chief or his designee shall also coordinate and direct the services of any outside fire departments called upon to assist in fire fighting on station property.

6.4 Station Security

6.4.1 The security force will have its normal function of station security in an emergency situation.

6.4.2 In the event of an emergency requiring activation of the Technical Support Center Phase I & II, the Security Shift Lieutenant or his designee shall make frequent reports to the Security and Contract Coordinator regarding the status of any security violations, threats or civil disturbances.

6.4.3 The Security Shift Lieutenant shall also coordinate and direct the services of any outside law enforcement agencies called upon to assist in an emergency situation.

6.4.4 The Security Shift Lieutenant shall inform the Security and Contract Coordinator in the TSC of the status of Site Assembly/Evacuation.

6.5 Evacuation Coordinator

6.5.1 In the event of a site evacuation, the Evacuation Coordinator shall be the overall person in charge at the evacuation site.

A. This position reports to the Emergency Coordinator or his designee for matters pertaining to personnel disposition, and status of the evacuation.

B. All evacuated supervisory personnel will in turn report to the Evacuation Coordinator.

6.5.2 The Emergency Coordinator shall notify the Evacuation Coordinator of the need for a Site Evacuation.

7.0 TRAINING & DRILLS

7.1 Initial Training

7.1.1 Training will be provided for Onsite Emergency Organizations personnel listed in Enclosures 1 of this directive as per Station Directive 2.5.2 (TS).

7.1.2 Operations personnel, Security personnel and Fire Brigade members will receive training as a part of their regular shift training or as scheduled by the Training Coordinator.

7.2 Annual Training

7.2.1 Emergency Organization personnel will receive annual overview retraining as per part 0 of the Emergency Plan.

7.3 Drills

7.3.1 Practice drill sessions will be held for each group within the organization to allow the individuals to perform their assigned functions.

7.3.2 The drill instructor will make corrections of performance as needed, during the drill.

7.3.3 The drill scenario, participants names and evaluation will be documented and any deficiencies will be corrected.

8.0 ENCLOSURES

Enclosure (1) Technical Support Center Staff - Phase I & II

Enclosure (2) Technical Support Center Telephone Activation

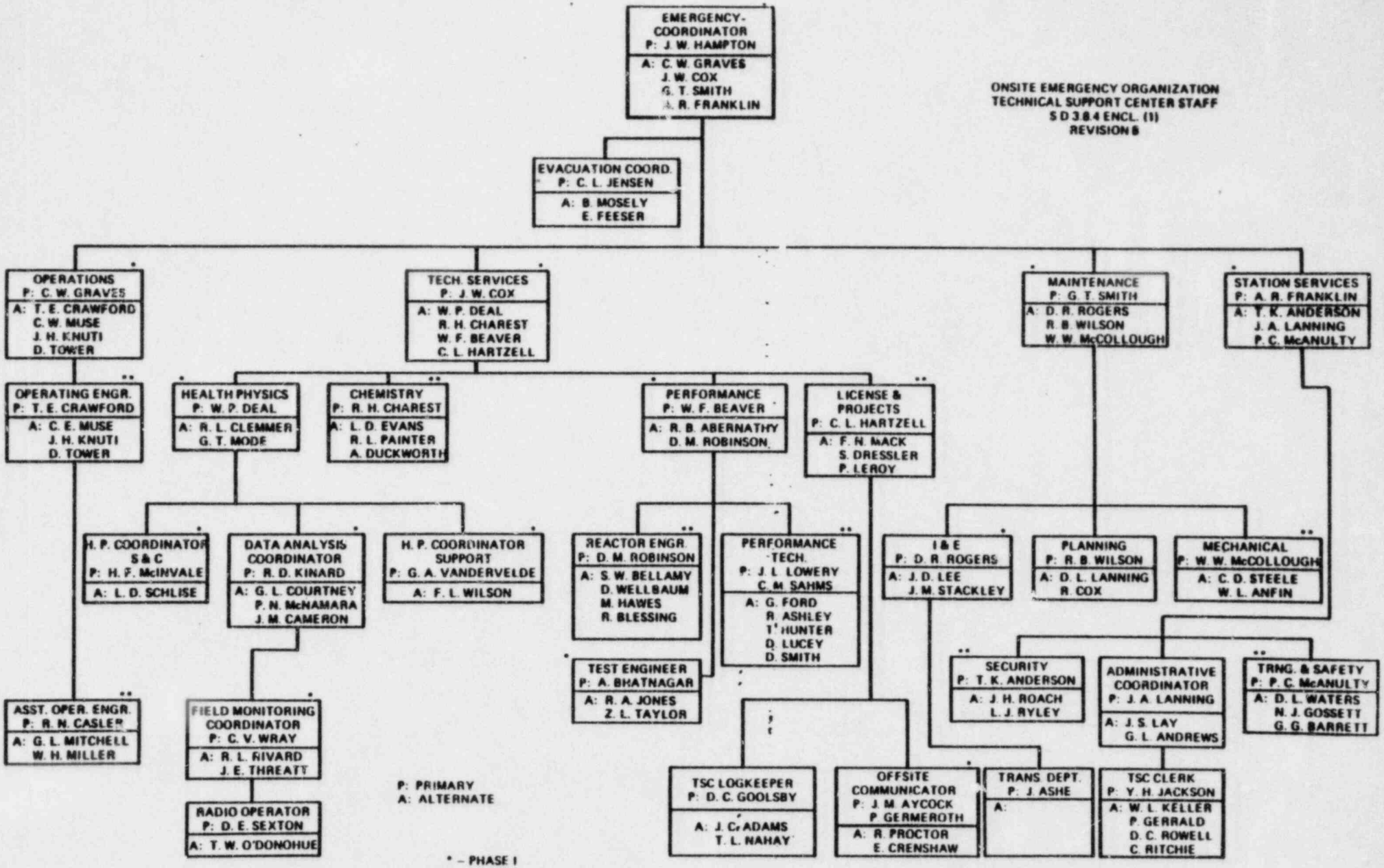
Enclosure (3) Operations Support Center Personnel

Enclosure (4) TSC Location

Enclosure (5) OSC Location

Enclosure (6) Notification Mechanism

ONSITE EMERGENCY ORGANIZATION
TECHNICAL SUPPORT CENTER STAFF
S D 3.8.4 ENCL. (1)
REVISION 8



ONSITE EMERGENCY ORGANIZATION
TELEPHONE ACTIVATION

All telephone numbers will be AREA CODE 803 unless otherwise noted.

Emergency Coordinator/Station Manager

P:	J. W. Hampton	O:	
		H:	
A:	C. W. Graves	O:	
		H:	
A:	J. W. Cox	O:	
		H:	
A:	G. T. Smith	O:	
		H:	
A:	A. R. Franklin	O:	
		H:	

Superintendent of Operations

P:	C. W. Graves	O:	
		H:	
A:	T. E. Crawford	O:	
		H:	
A:	C. E. Muse	O:	
		H:	
A:	J. H. Knuti	O:	
		H:	
A:	D. Tower	O:	
		H:	

Superintendent of Technical Service

P:	J. W. Cox	O:	
		H:	
A:	W. P. Deal	O:	
		H:	
A:	R. H. Charest	O:	
		H:	
A:	W. F. Beaver	O:	
		H:	
A:	C. L. Hartzell	O:	
		H:	

Superintendent of Station Services

P:	A. R. Franklin	O:	
		H:	
A:	T. K. Anderson	O:	
		H:	
A:	J. A. Lanning	O:	
		H:	
A:	P. McAnulty	O:	
		H:	

Superintendent of Maintenance

P:	G. T. Smith	O:	
		H:	
A:	D. R. Rogers	O:	
		H:	
A:	R. B. Wilson	O:	
		H:	
A:	W. W. McCollough	O:	
		H:	

NOTE P: Primary A: Alternate O: Office H: Home

ONSITE EMERGENCY ORGANIZATION
TELEPHONE ACTIVATION

All telephone numbers will be AREA CODE 803 unless otherwise noted.

Operating Engineer

P:	T. E. Crawford	O:	
		H:	
A:	C. E. Muse	O:	
		H:	
A:	J. H. Knuti	O:	
		H:	
A:	D. Tower	O:	
		H:	

Asst. Operating Engineer

P:	R. N. Casler	O:	
		H:	
A:	G. Mitchell	O:	
		H:	
A:	W. H. Miller	O:	
		H:	

Health Physics

P:	W. P. Deal	O:	
		H:	
A:	R. L. Clemmer	O:	
		H:	
A:	G. T. Mode	O:	
		H:	

Data Analysis Coordinator

P:	R. D. Kinard	O:	
		H:	
A:	G. L. Courtney	O:	
		H:	
A:	P. N. McNamara	O:	
		H:	

Chemistry

P:	R. H. Charest	O:	
		H:	
A:	L. D. Evans	O:	
		H:	
A:	B. Painter	O:	
		H:	
A:	A. Duckworth	O:	
		H:	

Performance Engineer

P:	W. F. Beaver	O:	
		H:	
A:	R. Abernathy	O:	
		H:	
A:	D. M. Robinson	O:	
		H:	

Field Monitoring Coordinator

P:	C. V. Wray	O:	
		H:	
A:	R. L. Rivard	O:	
		H:	
A:	J. E. Threatt	O:	
		H:	

H. P. Support Coodinator

P:	G. A. Vandervelde	O:	
		H:	
A:	F. L. Wilson	O:	
		H:	

Licensing & Projects Engineer

P:	C. L. Hartzell	O:	
		H:	
A:	F. N. Mack	O:	
		H:	
A:	S. W. Dressler	O:	
		H:	
A.	P. G. LeRoy	O:	
		H:	

Radio Operator

P:	D. E. Sexton	O:	
		H:	
A:	T. W. O'Donohue	O:	
		H:	

ONSITE EMERGENCY ORGANIZATION
TELEPHONE ACTIVATION

All telephone numbers will be AREA CODE 803 unless otherwise noted.

Reactor Engineer

P:	D. M. Robinson	O: H:
A:	S. M. Bellamy	O: H:
A:	M. Hawes	O: H:
A:	D. Wellbaum	O: H:
A:	R. Blessing	O: H:

Performance Technician

P:	M. Sahms	O: H:
A:	J. Lowery	O: H:
A:	G. Ford	O: H:
A:	R. Ashley	O: H:
A:	T. Hunter	O: H:
A:	D. Smith	O: H:
A:	D. Lucey	O: H:

Planning Engineer

P:	R. Wilson	O: H:
A:	D. Lanning	O: H:
A:	R. Cox	O: H:

I&E Engineer

P:	D. R. Rogers	O: H:
A:	J. Lee	O: H:
A:	J. Stackley	O: H:

Mechanical Engineer

P:	W. W. McCollough	O: H:
A:	C. D. Steele	O: H:
A:	W. L. Anfin	O: H:

Security & Contract Coordinator

P:	T. K. Anderson	O: H:
A:	J. Roach	O: H:
A:	L. Ryley	O: H:

Administrative Coordinator

P:	J. Lanning	O: H:
A:	J. Lay	O: H:
A:	G. Andrews	O: H:

Training & Safety

P:	P. McAnulty	O: H:
A:	D. Waters	O: H:
A:	J. Gossett	O: H:
A:	G. Barrett	O: H:

NOTE P: Primary A: Alternate O: Office H: Home

ONSITE EMERGENCY ORGANIZATION
TELEPHONE ACTIVATION

All telephone numbers will be AREA CODE 803 unless otherwise noted.

TSC Logkeeper

P: D. C. Goolsby O: H:

A: J. Adams O: H:

A: T. Nahay O: H:

Offsite Communicator

P: J. M. Aycock O: H:

A: P. W. Germeroth O: H:

A: E. M. Crenshaw O: H:

A: R. Proctor O: H:

Test Engineer

P: A. S. Bhatnagar O: H:

A: R. A. Jones O: H:

A: Z. L. Taylor O: H:

TSC Clerks

P: Y. Jackson O: H:

A: W. Keller O: H:

A: P. Gerrald O: H:

A: D. Rowell O: H:

A: C. Ritchie O: H:

H.P. Coordinator S&C

P: H. F. McInvale O: H:

A: L. D. Schlise O: H:

Evacuation Coordinator

P: C. L. Jensen O: Beeper H:

A: B. J. Moseley O: Beeper H:

A: E. L. Feeser O: Beeper H:

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
ENCLOSURE 5.4
HP/0/B/1009/15
EVALUATION OF PLUME LOCATION

Table 3.3 5-10 Mile Affected Zones

Wind Direction	Affected Zones
0.1° - 27°	C2, D2
27.1° - 69°	C2, D2, E2
69.1° - 95°	D2, E2, F2
95.1° - 132°	D2, E2, F2, F3
132.1° - 144°	E2, F2, F3
144.1° - 160°	E2, F2, F3, A2
160.1° - 201°	F2, F3, A2
201.1° - 229°	F2, F3, A2, B2
229.1° - 249°	F3, A2, B2
249.1° - 259°	A2, A3, B2
259.1° - 290°	A2, A3, B2, C2
290.1° - 304°	A3, B2, C2
304.1° - 333°	B2, C2
333.1° - 360°	B2, C2, D2

5.4.3 Determine the protective action guides (PAG), based on the calculated dose(s) on Sample Enclosure 5.1 and the following information:

5.4.3.1 For doses:

< 1 Rem Whole Body or,

< 5 Rem Thyroid

Recommend no action.

5.4 3.2 For doses:

1-5 Rem Whole Body or,

5-25 Rem Thyroid

Recommend evacuation of children and pregnant women and sheltering of remainder of personnel in the affected area.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
ENCLOSURE 5.4
HP/0/B/1009/15
EVALUATION OF PLUME LOCATION

5.4.3.3 For doses:

> 5 Rem Whole Body or,

> 25 Rem Thyroid

Recommend Evacuation of Population in Affected Area.

5.4.4. Record only the affected zones requiring protective action on sample Enclosure 5.5 along with the recommended protective action.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/15
ENCLOSURE 5.5
DOSE ASSESSMENT REPORT

ıke Power Crisis Company Management Plan Off-Site Dose Report - CATAWBA

Prepared By _____ Date/Time _____/_____ Emergency Drill (circle one)

Meteorology
Wind Speed _____ MPH
Wind Direction _____ degrees from North
Vertical Temp. Diff. _____ degrees C/100 ft.
Stability Class (circle one) A B C D E F G

Source Term	Time	Noble Gas	I-131 equivalent
Containment Rad. Monitor	_____	_____R/hr	_____R/hr
Containment Sample	_____	_____µCi/ml	_____µCi/ml
Unit Vent (Sample of EMF)	_____	_____µCi/ml	_____µCi/ml
Curie Release Rate	_____	_____Ci/sec	_____Ci/sec

Corresponds to:
_____ LOCA _____ LOCA through filter
_____ Core damage _____ Core damage through filter
_____ Tube rupture _____ Gas Decay Tank
_____ New fuel _____ Old fuel Other _____

Dose Projections

		.5 mi	2 mi	5 mi	10 mi
2hr Dose(rem) based on Containment release _____ml/hr	Whole Body	_____	_____	_____	_____
	Child thyroid	_____	_____	_____	_____
2hr Dose(rem) based on Unit Vent release @_____cfm	Whole Body	_____	_____	_____	_____
	Child thyroid	_____	_____	_____	_____
2hr Dose(rem) based on Steam release	Whole Body	_____	_____	_____	_____
	Child thyroid	_____	_____	_____	_____
2hr Dose(rem) based on _____ release @_____	Whole Body	_____	_____	_____	_____
	Child thyroid	_____	_____	_____	_____

Field Monitoring Data

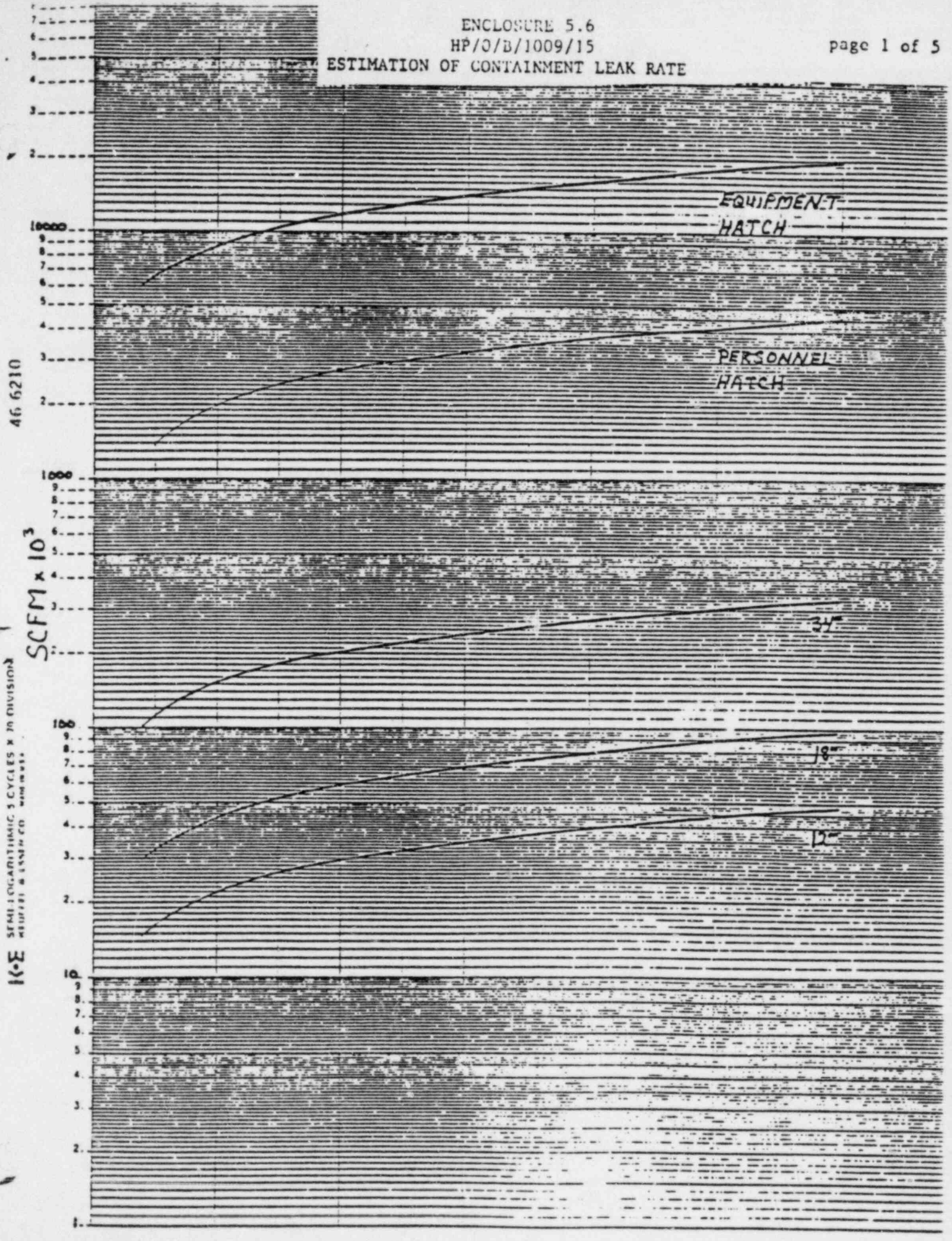
Location	Distance (mi)	Direction	Dose Rate (mrem/hr) Whole body	Dose Rate (mrem/hr) Child thyroid	Contamination ($dpm/100\ cm^2$)
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

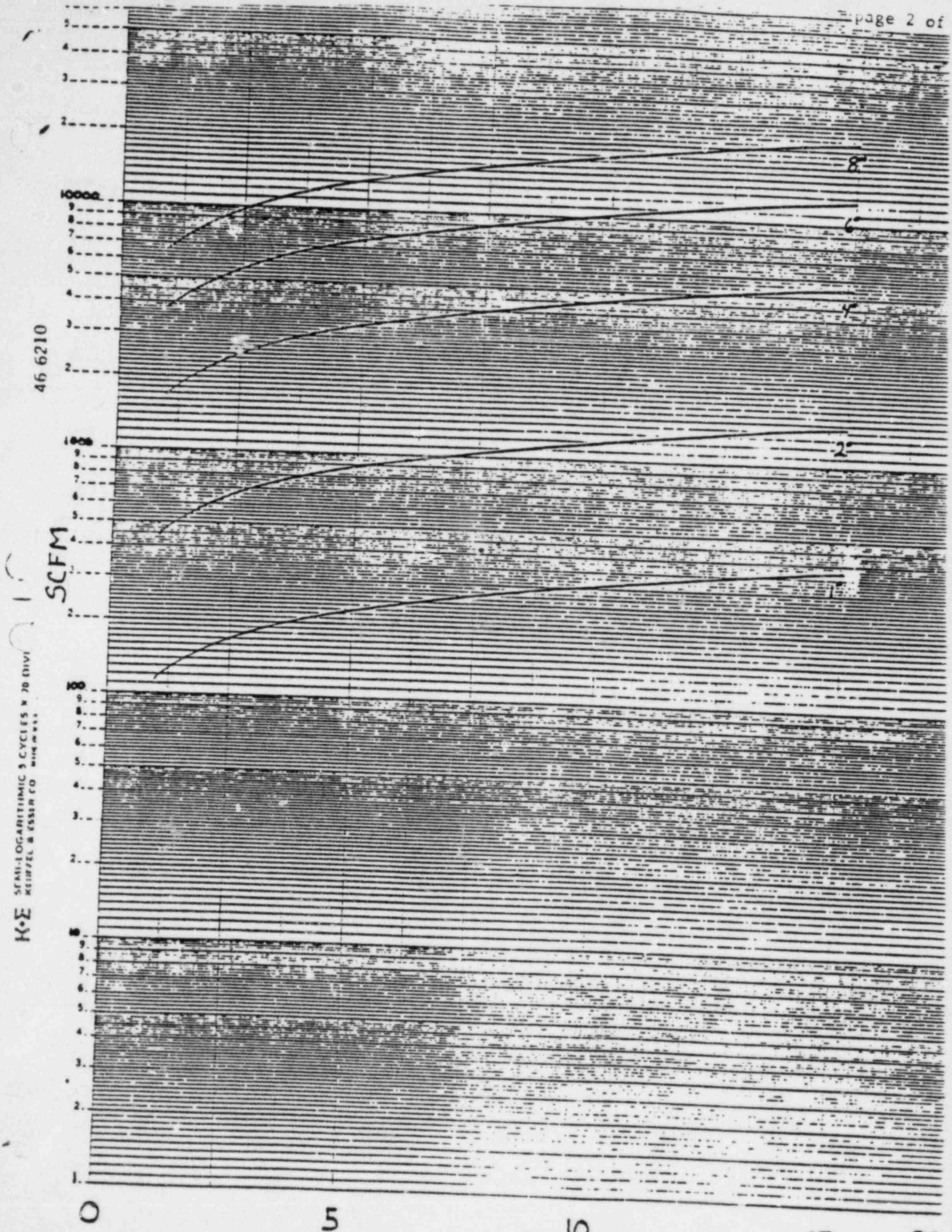
Affected Zones (circle zones)	0-2 mi	2-5 mi	5-10 mi	9-10 mi
	A0	A1 B1 C1 D1 E1 F1	A2 B2 C2 D2 E2 F2	A3 F3

COMMENTS: _____

xc: Data Analysis Coordinator, Station Health Physicist

ESTIMATION OF CONTAINMENT LEAK RATE

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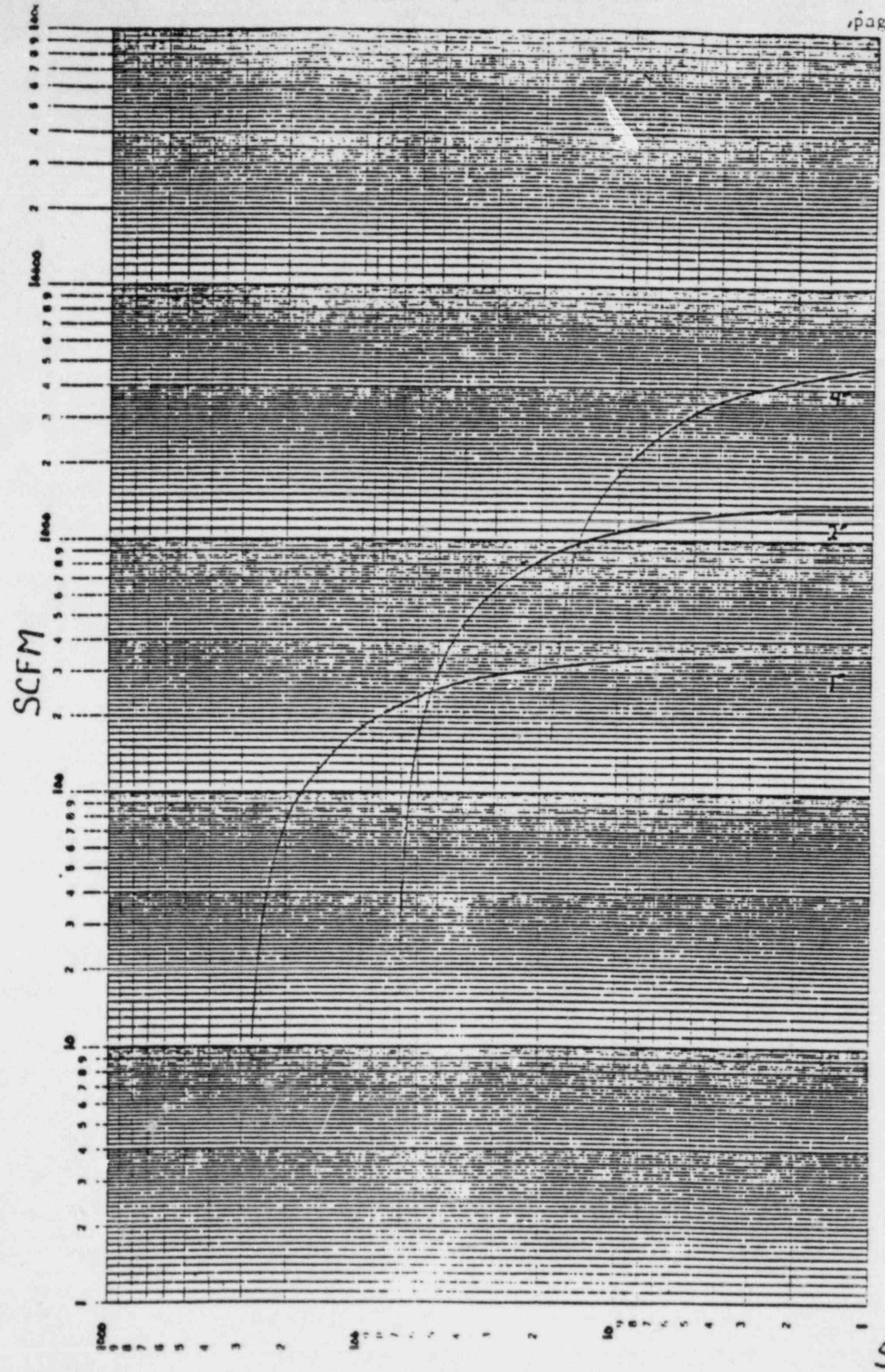
KEUFFEL & ESSER CO



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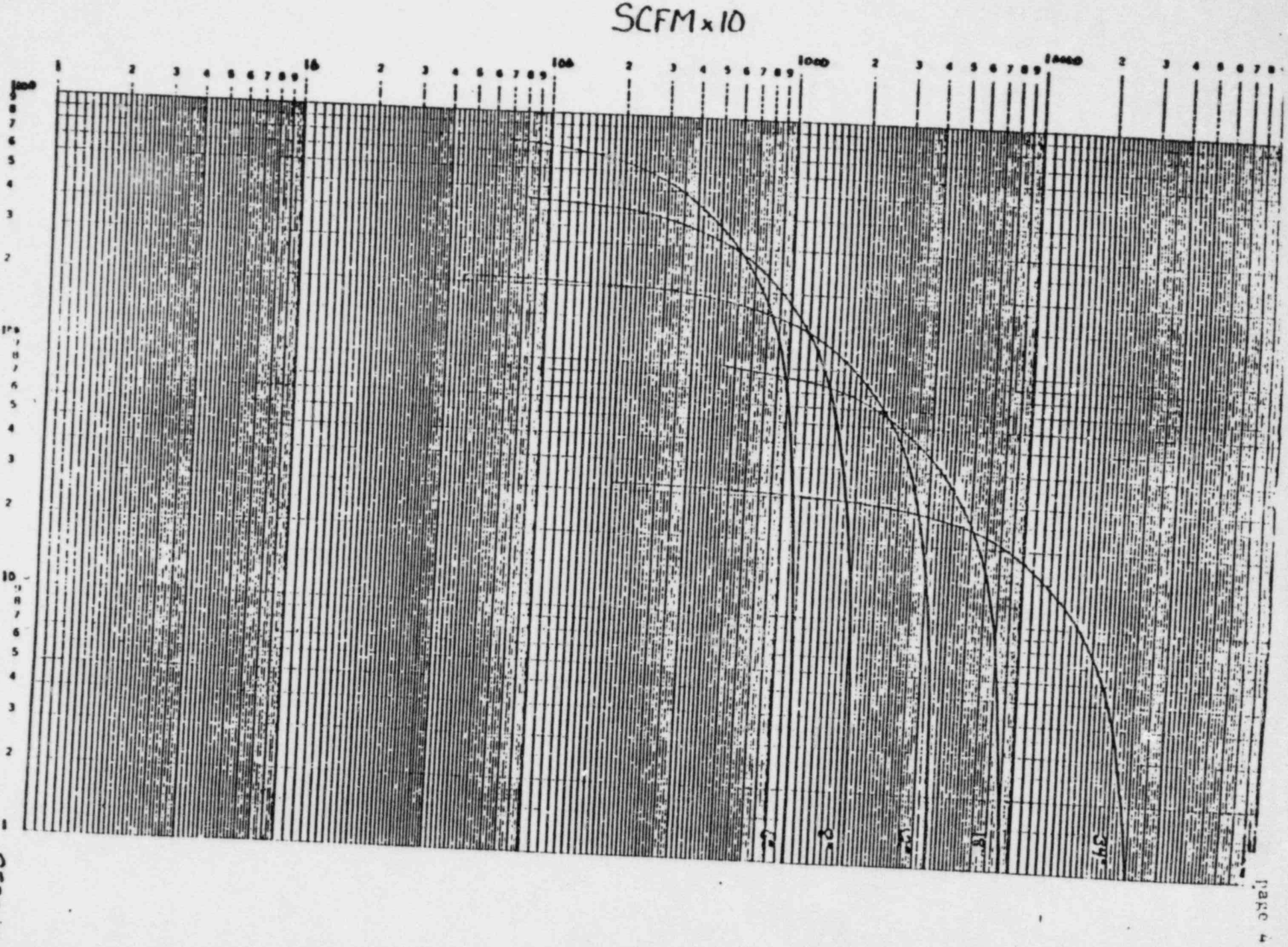
K·E LOGARITHMIC 3 × 5 CYCLES
KEUFFEL & ESSER CO MADE IN U.S.A.

K&E LOGARITHMIC 3 x 5 CYCLES
KEUFFEL & ESSER CO MADE IN USA

46 7520



46 7520

K·E

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: HP/0/B/1009/16
Change(s) 0 to
1 Incorporated

(2) STATION: Catawba Nuclear

(3) PROCEDURE TITLE: Distribution Of Potassium Iodide Tablets In The Event Of A Radioiodine Release

(4) PREPARED BY: Edwin M. Burfield DATE: 8-6-84

(5) REVIEWED BY: Lewis T. Nichols DATE: 8-6-84

Cross-Disciplinary Review By: _____ N/R: L. T. Nichols

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: Jim Curry Date: 8/6/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
DISTRIBUTION OF POTASSIUM IODIDE TABLETS IN THE EVENT OF A RADIOIODINE RELEASE

1.0 PURPOSE

This procedure provides information necessary to distribute Active Potassium Iodide (KI) tablets to in-plant personnel in the event of a release of radioiodine. Also, it outlines storage and supply information to assure sufficient quality and quantity of thyroid blocking material.

2.0 REFERENCES

2.1 HP/0/B/1001/09, Operation/Calibration Procedure for the Body Burden Analyzer

2.2 HP/0/B/1009/10, Body Burden Analysis Following Suspected Uptakes of Mixed Fission or Activation Products

2.3 System Health Physics Manual

2.4 NCRP Report No. 55; Protection of the Thyroid Gland in the Event of Releases of Radioiodine 1977

2.5 NCRP Report No. 65; Management of Persons Accidentally Contaminated With Radionuclide 1980

2.6 NUREG 0654

2.7 May 16, 1983 letter from L. Lewis to C. T. Yongue. Subject: Oconee Nuclear Station HP Procedure HP/0/B/1009/12, File: GS/05-750.01.

3.0 LIMITS AND PRECAUTIONS

3.1 KI must not be administered to a person who knows he (she) is allergic to iodide.

3.2 If a person has an allergic reaction or has severe side effects from taking KI tablets, they should stop taking KI tablets and consult a doctor or public health authority for instructions.

3.3 Personnel shall be advised not to deviate from the prescribed dosages and dosage rates.

3.4 Best results will be achieved when KI tablets are administered immediately (within 2 hours) after an exposure, although administration as late as 24 hours after an emergency will provide some protection.

3.5 Discolored or disfigured tablets, tablets that have reached the expiration date listed on the bottle, and bottles of KI with loose tops shall be discarded.

3.6 Hands of anyone touching the KI tablets must be free of radioactive contamination prior to taking the KI tablets.

4.0 PROCEDURE

4.1 Responsibilities For Distribution

4.1.1 The Station Health Physicist, in conjunction with available medical advice, shall control the distribution of KI tablets.

4.1.2 Persons suspected of having been in the affected area prior to the detection and during the release, persons present in the affected area and persons who will enter the area while a significant amount of radioiodine is present will be instructed by the Health Physics Supervision to immediately register in the KI distribution center (for example, the Technical Support Center).

4.1.2.1 A significant amount of radioiodine for short duration in-plant exposure is that amount taken into the body that would result in a dose of 10 rem or more. For example, exposure to approximately 700 weighted MPC-hours, or

6.1×10^{-6} uCi/ml Airborne I-131 for one hour, would result in a dose of 10 rem.

4.1.2.2 A significant amount of radioiodine for emergency workers in the field is 70 MPC (6.1×10^{-7} µCi/ml) I-131.

4.2 Registration of persons exposed to a significant amount of radioiodine.

4.2.1 When persons notified by Health Physics arrive at the distribution area, record appropriate data per Enclosure 5.1.

4.2.2 With the approval of the Station Health Physicist, the Health Physics representative shall give one (1) tablet to each person and instructions concerning the use of the tablet. Then issue to each person one bottle containing nine (9) KI tablets, and the package insert for the use of the tablets (refer to Enclosure 5.2 for an example of the General Manufacturers Guidelines).

4.2.2.1 Tablets are to be taken only as directed. One (1) tablet per day for the length of the emergency.

4.2.2.2 After the initial dose of KI, subsequent doses will be taken on a daily basis. Tablets should be taken as near a 24-hour schedule as possible.

NOTE: For best results, emphasis must be placed upon the proper use of these tablets.

4.2.3 Tablets removed from full bottle of KI should be stored in 10 ml plastic vials. The expiration date on the bottle from which the tablets were taken and the name of the Health Physics representative shall be recorded on the 10ml vials. Tablets stored in 10 ml plastic vials should then be used for single tablet initial issuance of KI to affected persons.

4.2.4 As directed by the Field Monitoring Coordinator (FMC) or the S&C Coordinator, team members shall ingest one (1) tablet of Potassium Iodide.

4.2.4.1 The FMC and/or S&C Coordinator will provide the information for Enclosure 5.1 and will ensure that distribution of KI per Step 4.2.2 is accomplished by team members.

4.3 Thyroid Burden Analysis Following Radioiodine Exposure

4.3.1 All persons receiving KI tablets should receive a thyroid scan. If the number of people render this step impractical, the Count Room Supervisor will select a representative sample of persons listed on Enclosure 5.1 who received KI tablets.

NOTE: Subsequent action involving thyroid burden analysis should follow guidelines established by HP/0/B/1009/10.

4.3.2 Records of thyroid scan shall be maintained per procedure.

NOTE: Distribute KI before analyzing thyroid concentration. Thyroid scans immediately after an accident could lengthen KI distribution time and cause confusion among personnel.

4.4 Storage Requirements

4.4.1 There are three major storage requirements to be observed:

4.4.1.1 Store in a temperature range of 59° to 86°F.

4.4.1.2 Store in a low humidity area (avoid direct exposure to liquids).

4.4.1.3 Store in an area protected from exposure to light.

4.4.2 Upon receiving a shipment of KI tablets, boxes shall be opened as soon as possible and bottles examined to ensure that an air-tight seal has been maintained. Bottles must be returned to boxes, and boxes must be sealed shut, so as to avoid exposure to light.

4.4.3 To ensure a sufficient supply of tablets, a minimum of 1,000 bottles with 14 tablets per bottle should be maintained on site.

4.5 Shelf Life and Changeout of KI Tablets

4.5.1 Thyro-Block™ tablet bottles are labeled with an expiration date from the factory. As tablets reach the expiration dates, the tablets must be discarded.

NOTE: Replacement tablets should be ordered at least three (3) months prior to the date of expiration listed on the bottles of KI.

4.5.2 Upon receiving a shipment of KI tablets, supplies should be shifted so as to use older tablets before new tablets.

5.0 ENCLOSURES

5.1 Sample of Potassium Iodide Tablet Distribution Data Sheet

5.2 Manufacturers Guidelines for Thyro-Block™ Tablets and Solution

Enclosure 5.1

POTASSIUM IODIDE TABLET DISTRIBUTION DATA SHEET

HP BADGE NUMBER	NAME	DEPARTMENT	DATE & TIME OF SUSPECTED EXPOSURE	DATE & TIME OF INITIAL ISSUANCE

Patient Package Insert For

THYRO-BLOCK™

(POTASSIUM IODIDE)
(pronounced poe-TASS-e-um EYE-oh-dyed)
(abbreviated: KI)
TABLETS and SOLUTION U.S.P.

TAKE POTASSIUM IODIDE ONLY WHEN PUBLIC HEALTH OFFICIALS TELL YOU. IN A RADIATION EMERGENCY, RADIOACTIVE IODINE COULD BE RELEASED INTO THE AIR. POTASSIUM IODIDE (A FORM OF IODINE) CAN HELP PROTECT YOU.

IF YOU ARE TOLD TO TAKE THIS MEDICINE, TAKE IT ONE TIME EVERY 24 HOURS. DO NOT TAKE IT MORE OFTEN. MORE WILL NOT HELP YOU AND MAY INCREASE THE RISK OF SIDE EFFECTS. *DO NOT TAKE THIS DRUG IF YOU KNOW YOU ARE ALLERGIC TO IODIDE.* (SEE SIDE EFFECTS BELOW.)

INDICATIONS

THYROID BLOCKING IN A RADIATION EMERGENCY ONLY.

DIRECTIONS FOR USE

Use only as directed by State or local public health authorities in the event of a radiation emergency.

DOSE

Tablets:

ADULTS AND CHILDREN 1 YEAR OF AGE OR OLDER: One (1) tablet once a day. Crush for small children.

BABIES UNDER 1 YEAR OF AGE: One-half (1/2) tablet once a day. Crush first.

Solution:

ADULTS AND CHILDREN 1 YEAR OF AGE OR OLDER: Add 6 drops to one-half glass of liquid and drink each day.

BABIES UNDER 1 YEAR OF AGE. Add 3 drops to a small amount of liquid once a day.

For all dosage forms: Take for 10 days unless directed otherwise by State or local public health authorities.

Store at controlled room temperature between 15° and 30°C (59° to 86°F). Keep container tightly closed and protect from light. Do not use the solution if it appears brownish in the nozzle of the bottle.

WARNING

Potassium iodide should not be used by people allergic to iodide. Keep out of the reach of children. In case of overdose or allergic reaction, contact a physician or the public health authority.

DESCRIPTION

Each THYRO-BLOCK™ TABLET contains 130 mg of potassium iodide.

Each drop of THYRO-BLOCK™ SOLUTION contains 21 mg of potassium iodide.

HOW POTASSIUM IODIDE WORKS

Certain forms of iodine help your thyroid gland work right. Most people get the iodine they need from foods, like iodized salt or fish. The thyroid can "store" or hold only a certain amount of iodine.

In a radiation emergency, radioactive iodine may be released in the air. This material may be breathed or swallowed. It may enter the thyroid gland and damage it. The damage would probably not show itself for years. Children are most likely to have thyroid damage.

If you take potassium iodide, it will fill-up your thyroid gland. This reduces the chance that harmful radioactive iodine will enter the thyroid gland.

WHO SHOULD NOT TAKE POTASSIUM IODIDE

The only people who should not take potassium iodide are people who know they are allergic to iodide. You may take potassium iodide even if you are taking medicines for a thyroid problem (for example, a thyroid hormone or antithyroid drug). Pregnant and nursing women and babies and children may also take this drug.

HOW AND WHEN TO TAKE POTASSIUM IODIDE

Potassium Iodide should be taken as soon as possible after public health officials tell you. You should take one dose every 24 hours. More will not help you because the thyroid can "hold" only limited amounts of iodine. Larger doses will increase the risk of side effects. You will probably be told not to take the drug for more than 10 days.

SIDE EFFECTS

Usually, side effects of potassium iodide happen when people take higher doses for a long time. You should be careful not to take more than the recommended dose or take it for longer than you are told. Side effects are unlikely because of the low dose and the short time you will be taking the drug.

Possible side effects include skin rashes, swelling of the salivary glands, and "iodism" (metallic taste, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes stomach upset and diarrhea).

A few people have an allergic reaction with more serious symptoms. These could be fever and joint pains, or swelling of parts of the face and body and at times severe shortness of breath requiring immediate medical attention.

Taking iodide may rarely cause overactivity of the thyroid gland, underactivity of the thyroid gland, or enlargement of the thyroid gland (goiter).

WHAT TO DO IF SIDE EFFECTS OCCUR

If the side effects are severe or if you have an allergic reaction, stop taking potassium iodide. Then, if possible, call a doctor or public health authority for instructions.

HOW SUPPLIED

THYRO-BLOCK™ TABLETS (Potassium Iodide, U.S.P.) bottles of 14 tablets (NDC 0037-0472-20.) Each white, round, scored tablet contains 130 mg potassium iodide.

THYRO-BLOCK™ SOLUTION (Potassium Iodide Solution, U.S.P.) 30 ml (1 fl. oz.) light-resistant, measured-drop dispensing units (NDC 0037-4287-25) Each drop contains 21 mg potassium iodide

WALLACE LABORATORIES
Division of
CARTER-WALLACE, INC.
Cranbury, New Jersey 08512

C.W.—[illegible]-79 Issue 1079

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: OP/0/A/6200/21
Change(s) 0 to
1 Incorporated
Revision #1

(2) STATION: Catawba

(3) PROCEDURE TITLE: Operating Procedure for the Post Accident Liquid Sampling Systems

(4) PREPARED BY: L.D. Evans DATE: 8-7-84

(5) REVIEWED BY: A.P. Jackson RHC DATE: 8/9/84

Cross-Disciplinary Review By: N/R: alj

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: (SRO) Date:

By: Date:

(7) APPROVED BY: J.W. Hf Date: 8/14/84

(8) MISCELLANEOUS:

Reviewed/Approved By: Date:

Reviewed/Approved By: Date:

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
OPERATING PROCEDURE FOR THE
POST ACCIDENT LIQUID SAMPLING SYSTEMS

1.0 PURPOSE

The purpose of the Post Accident Liquid Sampling Systems are to provide a method for promptly obtaining reactor coolant samples under a nuclear reactor accident condition.

Samples acquired during accident conditions (normal sample points are not usable due to high radiation conditions) will aid in the evaluation of information related to:

1) The extent of core damage which has occurred or is occurring.

2) Types and quantities of fission products released to containment liquid and gas phases.

3) Reactor Coolant Chemistry and Radiochemistry.

2.0 LIMITS AND PRECAUTIONS

2.1 In an accident situation the decision to collect a post-accident sample will originate from the Technical Support Center. The management involved in this decision should take two factors into consideration in making this decision:

(a) Has the situation stabilized to a degree so as to minimize the risk to individuals involved in the sampling?

(b) From the present information available, has the system stabilized to a degree that a representative sample may be obtained?

2.2 The PALS panel should only be used under the following circumstances:

(a) Caution: 1/2EMF4[illegible] flow for readings to be valid.

The Reactor Coolant System (NC) Gross Specific Activity is expected to be or is known to be greater than 200 µCi/ml. This corresponds to a reading on 1/2EMF48 of equal to or greater than 1.64×10^5 counts per minute.

(Correlation factor from HP/0/B/1000/10 is 1.22×10^{-3} (µCi/ml)(CPM))

(b) Primary Systems Sample Sinks 1A and 1B are inaccessible due to the radiation levels or for other identified reasons.

(c) The Station Chemist or his designee has requested that the PALS panel be put in service.

(d) The PALS panel is being run for monthly operational verification, maintenance, or training purposes.

(e) When use of the normal Primary Sample systems will create a Radiation Exposure problem in the NM Lab.

2.3 The undiluted sample volume is 5.0 ml and the final dilution volume shall be controlled between 250-3500 ml.

2.4 Health Physics personnel must perform continuous radiation monitoring during sampling at the liquid sample or control panel. During an accident situation, Health Physics personnel from the OSC must monitor all personnel entering the Auxiliary Building.

2.5 When handling radioactive samples, good laboratory practices are essential to prevent radioactive contamination of personnel, equipment, and physical structures. Reference applicable SWRP(s) and RWP(s).

2.6 Individuals that have been trained on this procedure are qualified to use this procedure. Individuals shall be trained at a minimum frequency of (6) months.

2.7 Due to the nature of this procedure, a Working Copy shall be used to ensure compliance.

3.0 PANEL PREPARATION

3.1 Initial Conditions

3.1.1 In order to expedite the process, the Primary Supervisor or his designee should send two Chemistry Technicians to collect the sample.

The technicians should be chosen taking into consideration the following:

(a) Being qualified on the PALS procedure
(b) Being respiratory qualified
(c) Age
(d) Accumulated Exposure
(e) Sex
(f) Physical Strength

Their responsibilities are outlined below:

Technician #1

(a) Checks the Initial Conditions Checklist from OP/0/A/6200/21 at the TSC and returns the checklist to Technician #2.
(b) Informs Health Physics at the OSC that he/she will be traveling to the Hot Lab.

(c) Dresses out as necessary.
(d) Travels to the Hot Lab and prepares for the analyses.
(e) Transports samples from the NM Lab to the Hot Lab, if necessary.
(f) Analyzes the samples.
(g) Reports results by phone to the Station Chemist at the TSC and returns to the OSC.
(h) Transports the completed data sheet to the Station Chemist at the TSC.

Technician #2

(a) Obtains the PALS panel keys. (Location: Secondary Supervisor's Office or Cold Lab)
(b) Dresses out as directed by Health Physics at the OSC.
(c) Health Physics plans out a path to be taken to the NM Lab, Hot Lab, Count Room and to exit the Auxiliary Building.
(d) Travels to the NM Lab and uses the PALS to collect liquid and gas samples.
(e) Transports the samples to the Hot Lab.
(f) Assists in the analysis of samples, if necessary.
(g) Reports results by phone to the Station Chemist at the TSC and returns to the OSC.

3.1.2 (Technician #1) - Verify the Initial Conditions Checklist (Enclosure 8.1) at the TSC and return it to Technician #2 at the OSC.

3.1.3 (Technician #1) - Inform Health Physics at the OSC of your plans to travel to the Hot Lab. Inform Health Physics that travel to the outside east backside of the Auxiliary Building may be required in order to calibrate the Gas Chromatograph. Also, inform them that you may transport the sample from the NM Lab to the Hot Lab. Dress out as required by Health Physics. The Hot Lab may be locked so bring the key.

3.1.4 (Technician #1) - In the Hot Lab, prepare for the sample analyses required in Section 7.0 of OP/0/A/6200/21.

3.1.5 (Technician #2) - Obtain the PALS panel keys from the Secondary Supervisor's office or the Cold Lab key box.

3.1.6 (Technician #2) - Report to the OSC and inform Health Physics of plans to obtain a post-accident liquid sample. Dress out as required by Health Physics. Health Physics personnel will decide the route to be taken to the PALS panel, the route to carry sample to the Hot Lab and Count Room, and the exit route back to the OSC. They will also address stay times (1-2 hours at the PALS Control Panel) and protective radiological dress and equipment. A Health Physics technician must be with any Chemistry personnel entering the Auxiliary Building at all times. Remember: The buddy system is in effect.

3.1.7 (Technician #2) - Travel to the NM lab with Health Physics coverage to collect a sample using the PALS panel. Remember to bring the required equipment listed on Enclosure 8.1, Part III.

3.2 Control Panel Preparation (Technician #2 - 543' Elev. NM Sample Room)

3.2.1 Close the following valves:

	Unit 1	Unit 2
NC Hot Leg Smpl Hdr to Radiation Monitor	1NM29	2NM29
NC Hot Leg Sample HX 1A Outlet	1NM264	2NM264
NC Hot Leg Sample HX 1B Outlet	1NM278	2NM278
ND Smpl HX Outlet	1NM265	2NM265

3.2.2 Open the following Operations valves:

	Unit 1	Unit 2
Post Accident Liquid Sample Panel Hx Inlet	1KCA8	2KCA8
Post Accident Liquid Sample Panel Hx Outlet	1KCA10	2KCA10

3.2.3 Call the Control Room and obtain the official time on the Control Room clocks. Set the clock near the PALS panel to the correct time.

3.2.4 Contact the Control Room and have them open the appropriate valve(s) listed below to obtain the desired sample. Reference Enclosure 8.1, Part 1(b).

NC Hot Leg A	Unit 1	Unit 2
Hot Leg Smpl Hdr Cont Isol.	1NM26B	2NM26B
Hot Leg A Smpl Cont. Isol.	1NM22A	2NM22A
NC Hot Leg B		
Hot Leg Smpl Hdr Cont. Isol.	1NM26B	2NM26B
Hot Leg C Smpl Cont. Isol.	1NM25A	2NM25A
ND Pump 1A Discharge		
ND Pump 1A Disch Smpl Line Isol.	1NM39	2NM39
ND Pump 1B Discharge		
ND Pump 1B Disch Smpl Line Isol.	1NM40	2NM40

3.2.5 Turn the position selector knob to "RESET" position. Place the key in the keylock power switch and turn to the right. ("Sample Position"). Press "Reset" button.

3.2.6 Place the toggle switch for the dilution water meter to "ON".

3.2.7 Place the toggle switch for the radiation monitor to "ON". Turn the scale switch to "BAT" to check the battery. The needle should travel to full scale. Turn the scale switch to "mR/hour". The "Rem/hour" scale may be used if readings are off the scale. If the radiation monitor is not functional, rely on Health Physics surveys to determine access to the sample panels.

3.2.8 Push in the pH probe "Standardize" knob.

3.2.9 Select the system to be sampled with the system selector - RX COOLANT (refers to NC Hot Leg), RX SUMP (refers to ND Pump Discharge).

3.2.10 Verify that the pH 6.86 buffer solution has been changed within the last 30 days by referencing Enclosure 6.8 from OP/0/A/6200/11. This enclosure is located in a notebook in the PALS drawer.

4.0 PANEL OPERATION (Technician #2)

4.1 Initial Conditions

4.1.1 Section 3.0 is complete with the Enclosure 8.1 signed off.

4.2 Panel Prep (Position 1)

4.2.1 Turn the selector knob to the "PANEL PREP" position.

4.2.2 Press the "SELECTION POWER - ACTIVATE" button.

4.2.3 Press the "PURGE" button, hold for 1 minute and release.

4.2.4 Press the "DRAIN" button and hold for 30 seconds then release.

4.2.5 Press the "CALIBRATION" button and hold until the pH meter stabilizes.

4.2.6 Adjust the pH meter to the known pH of the standard. Record the time on Enclosure 8.2.

4.2.7 Press the "PURGE" button for 30 seconds then release.

4.2.8 Press the "FLUSH" button and hold until the pH meter stabilizes (pH of demineralized water) then release. (1 to 3 minutes).

4.2.9 Press the "PURGE" button for 30 seconds and release.

4.2.10 Press the "DRAIN" button for 30 seconds and release.

4.2.11 Record the radiation monitor reading on Enclosure 8.2. (Background)

4.3 Sample Collection (Position 2)

4.3.1 Turn the selector knob to "SAMPLE RECIRC", Position 2.

4.3.2 Press the "SELECTION POWER - ACTIVATE" button. The radiation monitor should show an increased activity level as the sample enters the liquid panel. Tc1 should also show a temperature increase as liquid enters the panel. Record the starting time on Enclosure 8.2.

4.3.3 Press the "INCREASE FLOW" button gently to adjust flow such that Tc1 stabilizes close to 37°C. If Tc1 goes above 60°C, sample is not being cooled sufficiently. Press the "DECREASE FLOW" button and if temperature still increases, turn the selector knob to "RESET", press the "RESET" button and turn "POWER KEY" to a vertical position. Call the Primary Supervisor or his designee.

The "INCREASE FLOW" button increases sample flow and thus increases the sample temperature, Tc1, as long as it is depressed.

4.3.4 If Tc1 stabilizes below 37°C, depress the "INCREASE" button for not more than 1 second. Let Tc1 stabilize. Repeat this step until 37°C is reached.

4.3.5 When the sample temperature stabilizes (5-8 minutes), record the minutes required for stabilization, the temperatures of Tc1 and Tc2, and times on Enclosure 8.2.

4.3.6 Purge the sample for twice the amount of time it took Tc1 to stabilize.

4.3.7 Turn the selector knob to "SAMPLE", Position 3.

4.4 Sample (Position 3)

4.4.1 Press the "SELECTION POWER - ACTIVATE" button.

4.4.2 Monitor the temperature gauge and when Tc1 stabilizes record the radiation readings on Enclosure 8.2.

4.4.3 Subtract the initial background activity, (Section 4.2.11) from sample activity found during Tc1 stabilization (Section 4.4.2) and record on Enclosure 8.2. This is the radiation due to the sample.

4.4.4 Press the "PRESSURIZE" button momentarily. When the pressure stabilizes record the reading on Enclosure 8.2. Record this time as the "Time Sample Purge Isolated" on Enclosure 8.2.

4.4.5 Press the "TRAP" button momentarily.

4.4.6 Take the "Time Sample Purge Isolated" (#10) from Enclosure 8.2 and subtract "Minutes Required for Stabilization of Temperature" (#4) to obtain the time the sample actually left the system. Record on Enclosure 8.2.

4.4.7 Turn the selector knob to "DEPRESSURIZATION AND GAS STRIPPING", Position 4.

4.5 Depressurization and Gas Stripping (Position 4)

4.5.1 Verify that the vacuum gauge on the control panel shows at least 25 inches mercury.

4.5.2 Press the "SELECTION POWER-ACTIVATE" button. Wait at least 60 seconds and then verify the Incoming Sample Pressure gauge reads 0 ± 10 psig pressure.

4.5.3 Press the "GAS STRIPPING START" button momentarily beneath the water totalizer and monitor the vacuum gauge. Press the "GAS STRIPPING STOP" button momentarily when the vacuum gauge needle reads 19 ± 1 inch mercury. If ±1 inch is not achieved, a new stripped gas sample will need to be taken (i.e.) start from Section 4.2.

4.5.4 Turn the selector knob to "LIQUID SAMPLE", Position 5.

4.6 Liquid Sample (Position 5)/Liquid Sample Prep (Position 6)

4.6.1 Press the "SELECTION POWER-ACTIVATE" button.

4.6.2 Press the "GRAB SAMPLE" button momentarily.

4.6.3 Preset the dilution water flow totalizer for 250 ml and press the "RESET" button. Press the "START" button and let the dilution continue to completion. Record the dilution volume on Enclosure 8.2

4.6.4 Press the "LIQUID SAMPLE PREP-MIXING" button and hold for 10 seconds.

4.6.5 Press the "LIQUID SAMPLE-pH" button, momentarily. Allow the meter to stabilize.

4.6.6 Record the pH reading on Enclosure 8.2.

4.6.7 Press the "GAS SAMPLE - TRAP OPEN" button momentarily. Wait 10 seconds.

4.6.8 Press the "GAS SAMPLE - TRAP CLOSE" button momentarily.

4.6.9 Turn the selector knob to position 7 "LIQUID SAMPLE".

4.7 Liquid Sample (Position 7)

4.7.1 Press the "SELECTION POWER-ACTIVATE" button.

4.7.2 Hold the "LIQUID SAMPLE-TRAP OPEN" button for 30 seconds.

4.7.3 Immediately after 30 seconds, press the "LIQUID SAMPLE-TRAP CLOSE" button momentarily. Wait 30 seconds.

4.7.4 Turn the selector knob to "FLUSH", Position 8.

4.8 Flush (Position 8)

4.8.1 Press the "SELECTION POWER-ACTIVATE" button.

4.8.2 Press the "FLUSH STEP" button momentarily and wait 1 minute. The first flush light should be lit. (Gas Tank).

4.8.3 Press the "FLUSH STEP" button momentarily and wait for the pH and conductivity meters to read the pH of demineralized water, 2-3 minutes. Second flush light should be lit. (Probe)

4.8.4 Press the "FLUSH STEP" button momentarily and wait 4 minutes. Third flush light should be lit. (Dilution Tank)

4.8.5 Press the "FLUSH STEP" button momentarily and wait 1 minute. Fourth flush light should be lit. (Liquid Tank)

4.8.6 Press the "FLUSH STEP" button momentarily. This terminates the flushing cycles and the "COMPLETE" light turns on.

4.8.7 Turn the selector knob to "DRAIN", Position 9.

4.9 Drain (Position 9)

4.9.1 Press the "SELECTION POWER-ACTIVATE" button.

4.9.2 Press the "DRAIN STEP" button momentarily and wait 8 minutes. First drain light should be lit. (Dilution Tank).

4.9.3 Press the "DRAIN STEP" button momentarily and wait 1 minute. The second drain light should be lit. (Gas Line)

4.9.4 Press the "DRAIN STEP" button momentarily and wait 3 minutes. The third drain light should be lit. (Gas Tank)

4.9.5 Press the "DRAIN STEP" button momentarily and wait 1 minute. The fourth drain light should be lit. (Probe refill and system vent).

4.9.6 Press the "DRAIN STEP" button momentarily. This terminates the draining cycles and the "COMPLETE" light is illuminated.

4.10 Reset

4.10.1 Turn the selector knob to "RESET" and press the "RESET" button.

4.10.2 If the "PUMP SUMP" light is lit, it indicates the sump has water in it. Turn the SYSTEM POWER KEY to the left to operate the sump pump. The "PUMP ON" light will light and remain on until the pump has stopped.

4.10.3 After the "PUMP COMPLETE" light turns on, indicating that the pump has stopped, turn the SYSTEM POWER KEY to the right to re-energize the PALS.

4.10.4 Contact the Control Room and have them close the sample valves opened in Section 3.2.4.

4.10.5 Record the radiation level after flushing on Enclosure 8.2. If the field at the panel is greater than 3 Rem/hr. (3000 mR/hr.), go to Section 5.0.

4.10.6 If this is the last sample to be collected this trip, proceed to Section 4.11, Sample Panel Shutdown. If other samples are to be collected this trip proceed to Section 6.0, Sample Retrieval.

4.11 Sample Panel Shutdown

4.11.1 Turn the SYSTEM POWER KEY to the vertical off position and turn the position selector knob to "RESET".

4.11.2 Place the panel keys in a plastic bag with Enclosure 8.1 (NC or ND Loop data).

4.11.3 Turn the toggle switch for the dilution water meter to "OFF".

4.11.4 Turn the toggle switch for the radiation monitor to "OFF".

4.11.5 Pull out the pH probe standardize knob.

4.11.6 Proceed to Section 6.0, Sample Retrieval.

5.0 DECONTAMINATION

5.1 Repeat the panel Flush, Drain and Reset Modes: Sections 4.7.4 through 4.10.3.

5.2 If the level is less than 3 Rem/hour, turn the SYSTEM POWER KEY to the vertical position and continue with Section 4.10.6. If however, the radiation level remains greater than 3 Rem/hour, go back to Step 4.2 and repeat the sequence using a larger dilution volume based on the calculations of Enclosure 8.4.

6.0 SAMPLE RETRIEVAL

6.1 Initial Conditions

6.1.1 A gas and degassed liquid sample are in the gas and liquid samplers, respectively through the completion of Section 4.0.

6.1.2 Health Physics personnel are providing continuous monitoring of the area.

6.2 Sampling

6.2.1 Take two labels from the PALS drawer. Fill out the labels as follows (including the required information):

Label one: "Liquid Sample Name _____
Initials _____
Date _____
Actual Sample Time _____
Dilution Water Added _____"

Label the other: "Gas Sample Name _____
Initials _____
Actual Sample Time _____"

The "Actual Sample Time" and "Dilution Water Added" may be found on Enclosure 8.2, #11 and #12, respectively.

6.2.2 Take a 50 ml Nalgene sample bottle from the PALS drawer. Label it as follows:

"Dilution Water Sample _____
Date _____"

6.2.3 Take the completed labels and place each one on a plastic bag. Place another plastic bag inside of each of the two labeled plastic bags. These will be used later for double bagging the samples.

CAUTION: Do not approach the samplers on the sample panel until a Health Physics Technician has surveyed the area. Do not relay solely on the PALS panel's radiation monitor (1NMMT5350) as an indication the radiation in the area. (Omit during periodic testing).

6.2.4 Approach the samplers located on the sides of the sample panel. If possible, have the Health Physics Technician take an contact readings on each sample vessel. (Omit during periodic testing).

6.2.5 Detach the quick-disconnects on each sample vessel. Place the samplers in the labeled plastic bags. Seal tightly.

6.2.6 Place the samples in the sample carrier.

4.2.1 The Health Physics Shift Technician on duty shall initiate the T.B. Sump Sample Log. (See Sample Enclosure 5.2.) This form shall continue to be used until terminated under the direction of the Station Health Physicist, when requirements in 3.2 are met unless the indicated activity is due to EMF malfunction.

4.2.2 The Health Physics Shift Technician on duty shall collect a 3500 ml liquid sample using a new Marinelli beaker. The sample shall then be submitted to the Counting Room per reference 2.6.

NOTE: If T.B. sump sample results indicate net activity above background and EMF-33 is out of service, refer to 4.1.2.

4.2.3 If the T.B. sump sample results indicate no net activity above background, refer to reference 2.7.

4.2.4 If the T.B. sump sample results indicate net radioactivity above background, notify Operations and Radwaste Chemistry per T.B. Sump Sample Log (Sample Enclosure 5.2).

4.2.4.1 Chemistry shall notify Health Physics Shift Technician on duty of any releases to be made.

4.2.4.2 For any liquid releases, refer to references 2.6 and 2.8.

4.2.4.3 Sampling frequency of WC Mixing and Settling Pond and of groundwater drainage shall be determined by Health Physics shift supervision.

4.2.4.3.1 The samples shall be collected in a new liquid Marinelli beaker and submitted to the Counting Room per references 2.4 and 2.6.

5.0 ENCLOSURES

5.1 Sample Enclosure C.S.A.E. Sample Log

5.2 Sample Enclosure T.B. Sump Sample Log

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/03
SAMPLE ENCLOSURE 5.1

C.S.A.E. SAMPLE LOG

This form is to be used any time a primary to secondary leak is indicated.

1. Upon notification from Operations that a primary to secondary leak is indicated per Condensate Steam Air Ejector (EMF-33), record the following:

   Operations Rep._____ Date/Time _____/_____

   H.P. Rep. Receiving Call _____

2. Unit #_____

   Remarks: _____

   _____

   _____

3. If C.S.A.E. Sample results indicate net radioactivity above background, notify:

   Radwaste Chemistry Rep. _____ Date/Time _____/_____

   Operations Rep. _____ Date/Time _____/_____

   Notified by H.P. Rep. _____

4. The sampling frequency may change during the primary/secondary leakage, as deemed necessary by supervision. Record all changes below.

H.P. Supervisor	Initiated New Sampling Frequency Once Every	Date/Time	Health Physics Shift Technician Recording Change
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/03
SAMPLE ENCLOSURE 5.1

C.S.A.E. SAMPLE LOG

Sample Once Per ___ Hrs.	Date/Time of Sample	Signature	Remarks

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/03
SAMPLE ENCLOSURE 5.2

T.B. SUMP SAMPLE LOG

This form is to be used any time a primary to secondary leak is indicated.

1. Upon notification from Operations that a primary to secondary leak is indicated per Turbine Building Sump (EMF-31), record the following:

   Operations Rep._____ Date/Time _____/_____

   H.P. Rep. Receiving Call _____

2. Unit #_____

   Remarks: _____

   _____

   _____

3. If T.B. Sump Sample results indicate radioactivity above 10CFR20 Table II Col. II, notify the following representatives that batch releasing is required:

   Radwaste Chemistry Rep. _____ Date/Time _____/_____

   Operations Rep. _____ Date/Time _____/_____

   Notified by H.P. Rep. _____

4. The sampling frequency may change during the primary/secondary leakage, as deemed necessary by supervision. Record all changes below.

H.P. Supervisor	Initiated New Sampling Frequency Once Every	Date/Time	Health Physics Shift Technician Recording Change
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____
_____	_____ Hours On	_____/_____	_____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/03
SAMPLE ENCLOSURE 5.2

T.B. SUMP SAMPLE LOG

Sample Once Per ___ Hrs.	Date/Time of Sample	Signature	Remarks

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: HP/0/B/1009/05
Change(s) 0 to
3 Incorporated

(2) STATION: Catawba Nuclear

(3) PROCEDURE TITLE: Personnel/Vehicle Monitoring For Emergency Conditions

(4) PREPARED BY: Edwin M. Benfield DATE: 8-6-84

(5) REVIEWED BY: [signature] DATE: 8-6-84

Cross-Disciplinary Review By: _____ N/R: [signature]

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/6/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
PERSONNEL/VEHICLE MONITORING
FOR EMERGENCY CONDITIONS

1.0 PURPOSE

To provide guidance for personnel and vehicle monitoring during a site evacuation resulting from a radiological emergency.

2.0 REFERENCES

2.1 HP/0/B/1003/31, Operation and Calibration: Eberline Model E-140N Portable Count Rate Meter

2.2 HP/0/B/1004/06, Personnel Decontamination

2.3 HP/0/B/1004/21, Equipment Decontamination

2.4 HP/0/B/1009/09, Guideline for Accident and Emergency Response

2.5 HP/0/B/1009/16, Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release

2.6 RP/0/A/5000/10, Conducting a Site Assembly or Evacuation

2.7 Station Directive 3.0.7, Site Assembly/Evacuation

2.8 Station Directive 3.8.3, Contamination Provention, Control, and Decontamination Responsibilities

2.9 Catawba Nuclear Station Emergency Plan

2.10 System Health Physics Manual

3.0 LIMITS AND PRECAUTIONS

3.1 If survey teams are expected to be exposed to I-131 in excess of 70 MPC (6.1×10^{-7} µCi/ml), and as directed by S&C Coordinator, each team member should ingest one tablet of Potassium Iodide.

3.2 Ensure that the Radiation Monitoring equipment has been battery checked and source response checked as per Reference 2.1.

3.3 If emergency vehicle is found to be contaminated as per Reference 2.8, Section 6, and alternative transportation is not available, that vehicle may be released if needed for assistance and be decontaminated to below acceptable limits at the first opportunity as per Reference 2.3.

4.0 PROCEDURE

4.1 The Surveillance and Control Coordinator shall designate a supervisor or lead technician to assume the responsibilities of the Reserve Personnel/Personnel Monitoring Leader (RP/PM Leader).

4.1.1 The RP/PM Leader shall be responsible for personnel monitoring when an evacuation occurs due to a radiological incident and other responsibilities as outlined in Reference 2.4.

4.1.2 The RP/PM Leader shall discuss, per Step 4.4, with the Surveillance and Control Coordinator the practicalities of relocating monitoring stations when the background is above 350 ccpm for friskers.

4.1.3 The RP/PM Leader shall also arrange for monitoring of the assembly points and initiate action when dose rates reach 2 mr/hr.

4.2 The RP/PM Leader shall dispatch an Emergency Personnel Monitoring Team to the following locations upon initiation of a site assembly resulting from a radiological incident.

4.2.1 Personnel Access Portal (PAP)

4.2.2 Construction Personnel Exit Area (Brass Gate).

NOTE: Manpower shall be supplied with respect to the nature of the accident and the availability of Health Physics Personnel.

4.2.3 Each survey team shall have a copy of HP/0/B/1009/05 Personnel Monitoring for Emergency Conditions, Catawba Nuclear Station Directive 3.8.3 Contamination and Decontamination Responsibilities and an Personnel Monitoring Kit.

4.2.4 Upon reaching their designated locations, the survey teams shall verify their position with the RP/PM Leader.

4.2.5 The Construction Personnel Exit Area Team shall insure all personnel receive proper monitoring leaving via this exit during evacuation.

4.2.6 The PAP Area Survey Team shall insure that the portal monitors are used properly and provide additional monitoring in order to expedite evacuation.

4.2.7 If an individual is found to be contaminated as per Reference 2.8, the survey team shall:

4.2.7.1 Dress the individual in the appropriate protective clothing and when time permits, decontaminate as per Reference 2.2.

4.2.7.2 Notify the RP/PM Leader of all cases of personnel contamination.

4.2.8 Survey teams should be supplemented, relieved or secured as directed.

4.2.9 Survey teams shall monitor dose rates at exit areas. Should dose rates exceed 2 mr/hr, team shall initiate discussion with RP/PM Leader to expedite any evacuation through that exit point.

4.2.10 The RP/PM Leader should notify the Surveillance and Control Coordinator of all actions taken.

4.3 The RP/PM Leader shall dispatch a team to monitor sight assembly points as listed in Reference 2.7.

4.4 The RP/PM Leader shall assemble another Emergency Monitoring Team upon initiation of a site assembly from a radiological incident for random monitoring of employee vehicle and when site evacuation is initiated, dispatch this team to the Evacuation Facility (site Alpha: Transmission Line Maintenance Warehouse near Hwy SC 274 and SC 161. Site Bravo: Allen Steam Station, Hwy NC 273, South of Belmont).

NOTE: Monitoring equipment for vehicles is located in the Personnel Monitoring Kit located in the PAP area.

4.4.1 If a vehicle is found to be contaminated as per Reference 2.8, the survey team shall:

4.4.1.1 Prevent further movement of the vehicle.

4.4.1.2 Post the vehicle as a contaminated area.

4.4.1.3 Provide general information on contamination surveys to the RP/PM Leader.

4.4.1.4 Monitor all vehicles in the area for contamination.

4.4.1.5 Decontaminate Vehicle using best method(s) available on property owned by Duke Power Company that does not drain to a water system.

4.4.2 Upon site evacuation and notification of Evacuation Facility (Alpha or Bravo), the RP/PM Leader shall move the monitoring team to the Evacuation Facility who shall:

4.4.2.1 Locate Personnel Survey Kit at evacuation Facility and prepare to monitor incoming personnel. Personnel Survey Kit storage locations are identified on the Evacuation Facility Layout Drawing,(Enclosure 5.1).

4.4.2.2 Supervise the monitoring and release of personnel as described in Steps 4.2.3 through 4.2.10.

4.4.2.3 List all personnel's names, social security number and Health Physics badge number on Evacuation Personnel Dose Record Sheet, (Enclosure 5.2). This form should be used for dose commitment at a later time.

4.4.2.4 Supervise monitoring of employee vehicles and take action as appropriate per Step 4.3.1.

4.4.2.5 Notify RP/PM Leader or S & C Coordinator of all actions taken.

4.5 If background radiation readings render frisker and/or portal monitor useless, the RP/PM Leader shall:

4.5.1 Discuss with the Surveillance and Control Coordinator relocating the personnel monitoring location to a location of lower background.

4.5.2 Procure from the Temporary Administration Building a 20 watt portamoble radio for communication with the OSC. Check operability of the radio.

4.5.3 Move the monitoring teams to an area of lower background where personnel control can be maintained and prepare to monitor personnel.

4.5.4 Supervise the monitoring and release of personnel as described in Steps 4.2.3 through 4.2.10.

4.5.5 Supervise monitoring of employee vehicles and take actions as appropriate per Step 4.3.1.

4.5.6 Notify Surveillance and Control Coordinator of all actions taken.

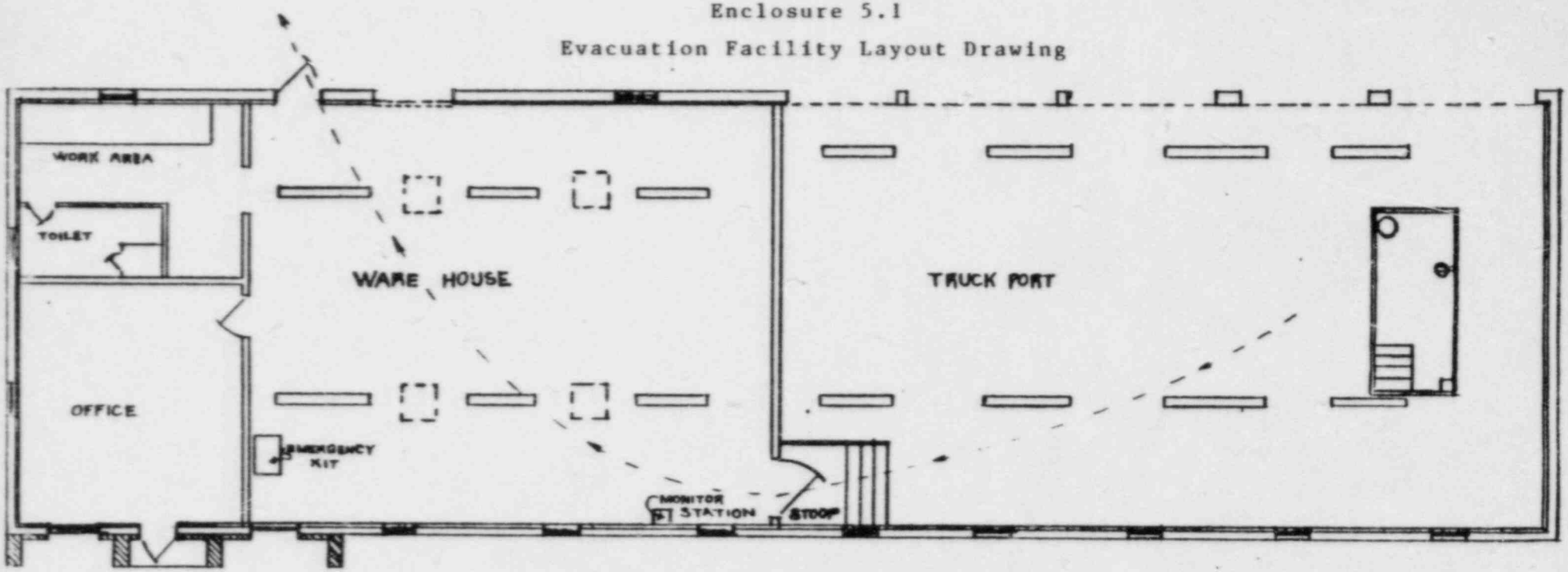
5.0 ENCLOSURES

5.1 Sample of Evacuation Facilities Layout Drawings

5.2 Sample of Evacuation Personnel Dose Record

HP/O/B/1009/05
Enclosure 5.1

Evacuation Facility Layout Drawing

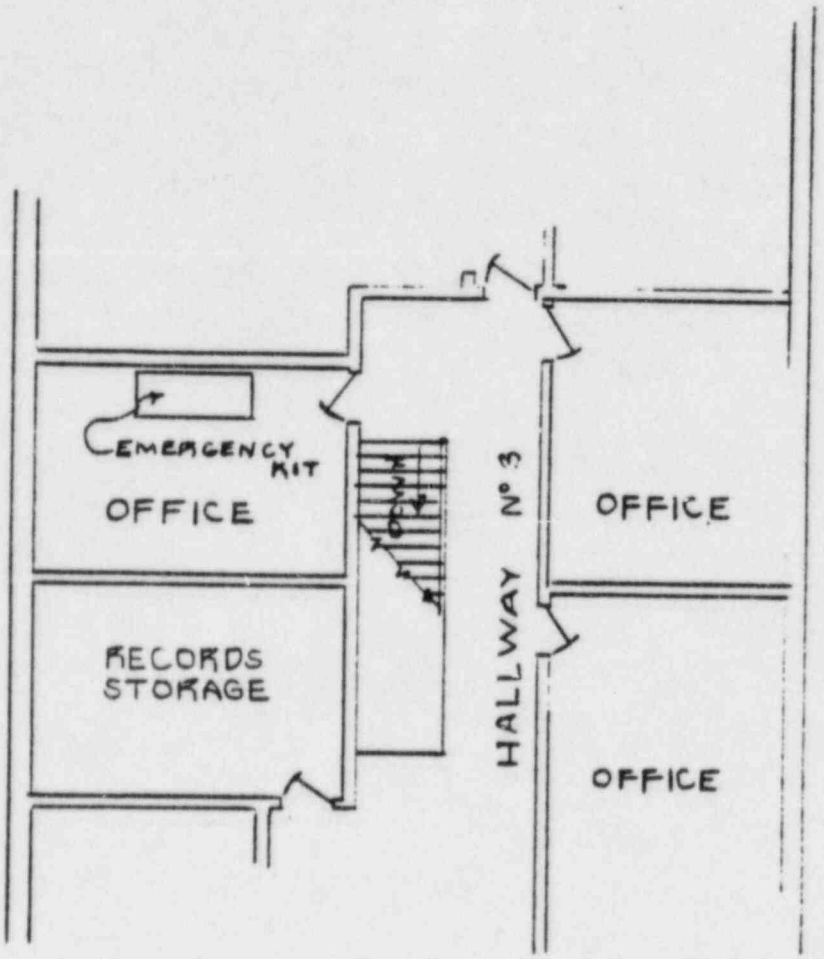


FLOOR PLAN

ROCK HILL MAINTENANCE BLDG.
DUKE POWER COMPANY

------- Flow Path

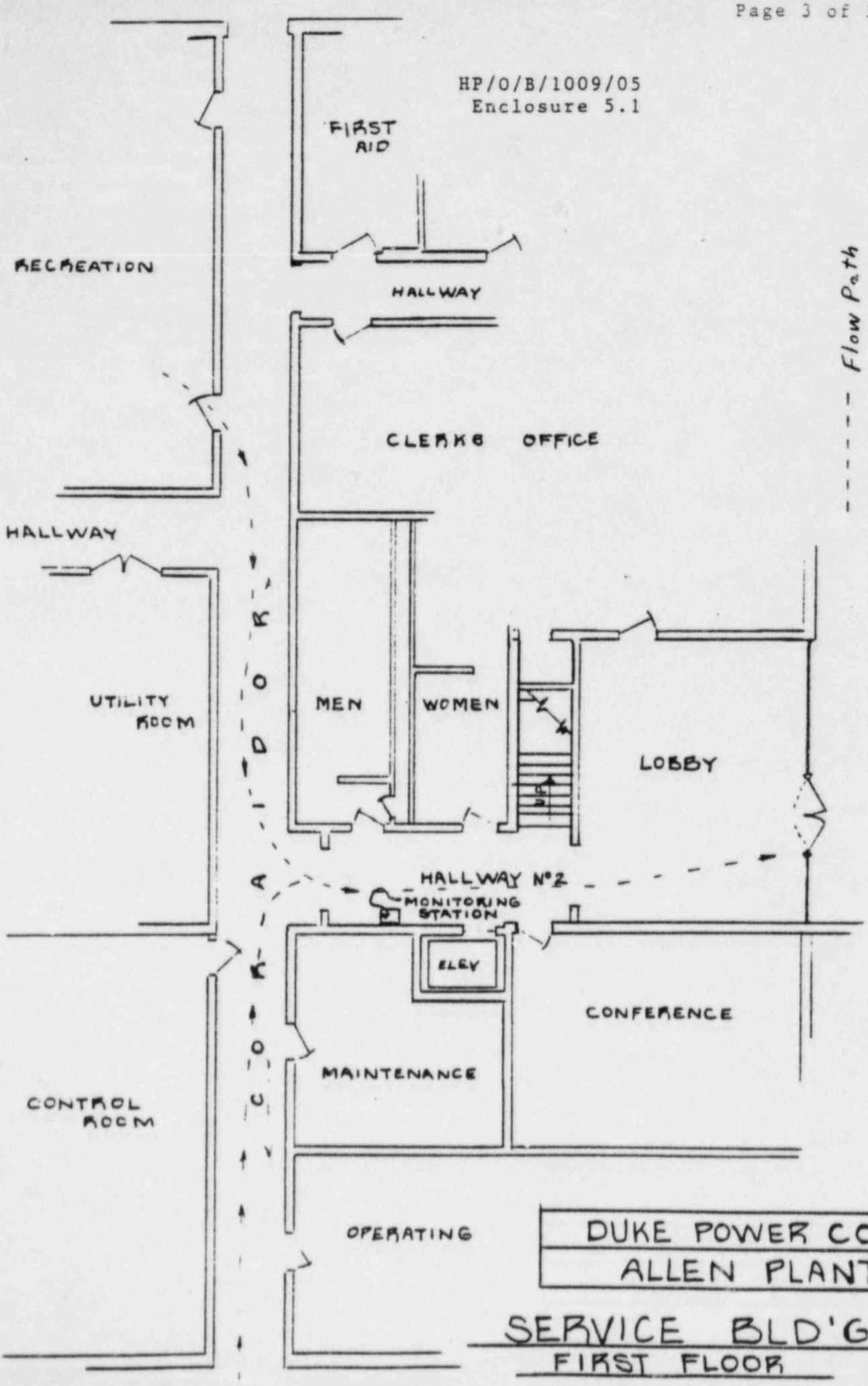
HP/O/B/1009/05
Enclosure 5.1



SERVICE BLD'G
SECOND FLOOR

DUKE POWER COMPANY
ALLEN PLANT

HP/O/B/1009/05
Enclosure 5.1



DUKE POWER CO.
ALLEN PLANT

SERVICE BLD'G
FIRST FLOOR

EVACUATION PERSONNEL DOSE RECORD

NAME	SOCIAL SECURITY NUMBER	H.P. BADGE NUMBER	DOSE (mrem)	COMMENTS

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: HP/O/B/1009/07
Change(s) 0 to
3 Incorporated

(2) STATION: Catawba Nuclear

(3) PROCEDURE TITLE: In-Plant Particulate And Iodine Monitoring Under Accident Conditions

(4) PREPARED BY: Edwin M. Burfield DATE: 8-6-84

(5) REVIEWED BY: [signature] DATE: 8-6-84

Cross-Disciplinary Review By: _____ N/R: [signature]

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/6/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
IN-PLANT PARTICULATE AND IODINE
MONITORING UNDER ACCIDENT CONDITIONS

1.0 PURPOSE

To provide a method of particulate and iodine assay in the plant under accident/emergency conditions when normal analysis equipment is not available.

2.0 REFERENCES

2.1 HP/0/B/1000/02 - Taking, Counting, and Recording Surveys

2.2 HP/0/B/1003/02 - Operating and Calibration Procedure: Low Volume, Portable Air Samplers

2.3 HP/0/B/1009/16 - Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release

2.4 Catawba Nuclear Station Emergency Plan - Section I.2

2.5 NUREG-0694: TMI - Related Requirements for New Operating Licenses

3.0 LIMITS AND PRECAUTIONS

3.1 This procedure is written for use only under abnormal accident/emergency conditions when normal methods of quantifying iodine are not available.

3.2 Purging of silver zeolite cartridges should be done under a filtered hood whenever practical. In all cases it should be done in an uncontaminated area.

3.3 The activity calculations performed in this procedure are no longer valid once more reliable counting methods, (e.g. MCA, etc.), become available.

3.4 If exposure is expected from I-131 in excess of 70 MPC (6.1×10^{-6} µCi/ml), and directed by the S&C Coordinator, technicians should ingest one tablet of Potassium Iodide as per Reference 2.3.

3.5 Respiratory protective equipment should be used where possible to limit uptakes.

4.0 PROCEDURE

4.1 Sample Collection and Preparation

4.1.1 Using filter paper and a silver zeolite cartridge, collect a representative sample per references 2.1 and 2.2.

4.1.2 Remove and separate the filter and the cartridge. Place each in an individual sample bag and label accordingly.

4.1.3 In order to remove unwanted (i.e.; Xenon, etc.) gases from the cartridge, purge as follows:

4.1.3.1 Remove the cartridge from the sample bag and place it in a sample holder with a clean filter.

4.1.3.2 Orient the sample holder such that flow will be in the same direction as during collection.

NOTE: Care should be taken since a high purge flow rate could cause a release of Radioactive Iodine from the cartridge.

4.1.3.3 Crack open the purge valve until a low purge rate is noticed. Purge for about one third the time of sample duration at low purge flow.

4.1.3.4 Remove the cartridge and place in a clean sample bag. Mark the bag with original sample information, and note the purge date and time.

4.1.4 Transport samples to an adequate sample counting location, and complete the top portion of the Emergency Particulate/ Iodine Assay Form (Enclosure 5.1).

4.2 Iodine Activity Determination

4.2.1 With the cartridge still in the bag determine the dose rate at 1/2 inch from the inlet face of the cartridge.

4.2.1.1 For samples reading $\geq$ .1 mrem/hr above background on a low range survey instrument, record the dose rate on Enclosure 5.1.

NOTE: Derivations of formulas used on Enclosure 5.1 are provided on Enclosure 5.2.

4.2.1.2 For samples reading <.1 mrem/hr above background, use an RM-14/HP-260 or equivalent to determine corrected counts per minute (ccpm).

Divide the ccpm by 3600 (or other correction factor if available) to determine mrem/hr, and record on Enclosure 5.1.

4.2.2 Complete the "Iodine Activity" section of Enclosure 5.1 to determine Iodine Activity.

4.3 Particulate Activity Determination (Gross)

4.3.1 Remove the filter paper from bag for counting.

4.3.2 If a scaler is available, use it to count the filter paper and record results and other necessary data on Enclosure 5.1.

4.3.3 If a scaler is not available, use an RM-14/HP-210 or equivalent and record the average corrected counts per minute. If no efficiency factor is available, use 10.

4.3.4 Complete the "Particulate Activity" section of Enclosure 5.1 to determine particulate activity.

4.3.5 Return the filter paper to its bag.

4.4 Sample and data handling

4.4.1 Attach the samples to a copy of the completed Enclosure 5.1 and hold for possible further analysis.

4.4.2 Notify appropriate personnel of results.

5.0 ENCLOSURES

5.1 Sample of Emergency Particulate/Iodine Assay

5.2 Derivation of Activity Calculation Formulas

EMERGENCY PARTICULATE/IODINE ASSAY

Sample Location _____ Date _____

Start Time _____ Performed By _____

Stop Time _____ Air Sampler Type/No. _____/_____

Sample Duration _____ Flow Rate _____

Sample Volume _____ (1 ft^3 = 2.83E4 cc)

IODINE ACTIVITY

Instrument Type/No. _____/_____

Sample Dose Rate @ 1" = _____ mrem/hr

$$\text{Iodine Activity} = \frac{\text{\_\_\_\_\_(A) x 28.2}}{\text{\_\_\_\_\_(B)}} = \text{\_\_\_\_\_} \ \frac{\mu Ci}{cc}$$

Where: A = Sample Dose Rate in mrem/hr

B = Sample Volume in cc (or ml)

PARTICULATE ACTIVITY

Instrument Type/No. _____/_____

Background _____ Efficiency Factor _____

Total Counts _____ ÷ Count Time _____ = _____ cpm

cpm _____ - Background _____ = _____ ccpm

$$\text{Gross Particulate Activity} = \frac{\text{\_\_\_\_\_(A) x \_\_\_\_\_(B) x 4.5E-7}}{\text{\_\_\_\_\_(C)}} = \text{\_\_\_\_\_} \ \frac{\mu Ci}{cc}$$

Where: A = ccpm B = Efficiency Factor in dpm/cpm

C = Sample Volume in cc (or ml)

Remarks: _____

_____

DERIVATION OF ACTIVITY CALCULATION FORMULAS

1. Iodine Activity

I-131 $\bar{E}$ = .19 MeV for beta

volume of cartridge, $v = \pi r^2 h$

$= \pi$ (1.13 in x 2.54 cm/in)^2 x (1.04 in x 2.54 cm/in)

$= 67.76\ cm^3$

mass of cartridge, m = 4 oz x 28.35 gm/oz = 113.4 gm

density of cartridge, $\rho = \frac{m}{v} = \frac{113.4\ gm}{67.76\ cm^3} = 1.67\ gm/cm^3$

thickness of cartridge, x = 1.67 gm/ ^{3} x (1.04 in x 2.54 cm/in)

$= 4.41\ gm/cm^2$

.19 MeV beta particle energy range = 40 mg/cm^2
(p. 123, Rad Health Handbook)

absorption coefficient, $\mu = \frac{1}{40\ mg/cm^2} = .025\ cm^2/mg$

self absorption correction: (p. 136, Principles of Radioisotope Methodology, Third Ed.)

$$fs = \frac{1 - e^{-\mu x}}{\mu x}$$

fs = self absorption coefficient
μ = absorption coefficient, cm^2/mg
x = sample thickness, mg/cm^2

$$fs = \frac{1 - e^{-.025\ cm^2/mg \times 1000\ mg/gm \times 4.41\ gm/cm^2}}{.025\ cm^2/mg \times 1000\ mg/gm \times 4.41\ gm/cm^2} = .009$$

$$1\ mR/hr \times \frac{87.8\ erg/gm}{R} \times \frac{1\ R}{1000\ mR} \times \frac{1\ MeV}{1.6 \times 10^{-6}\ erg} \times \frac{1\ hr}{3600\ sec} \times \frac{1\ \mu Ci}{3.7 \times 10^4\ dps}$$

$$\times \frac{d}{.19\ MeV} \times 113.4\ gm = .245\ \mu Ci$$

so, $\frac{.245\ \mu Ci}{1\ mR/hr} = .245\ \mu Ci/mR/hr$

DERIVATION OF ACTIVITY CALCULATION FORMULAS

$$\frac{.245}{.009}\ \mu Ci/mR/hr = 28.2\ \mu Ci/mR/hr$$

$$\frac{mR/hr \times 28.2\ \mu Ci/mR/hr}{cc} = \frac{\mu Ci}{cc}$$

assume 1 mR = 1 mRem

2. Particulate Activity

$$\frac{ccpm \times dpm/cpm \times 4.5 \times 10^{-7}\ \mu Ci/dpm}{cc} = \frac{\mu Ci}{cc}$$

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: HP/0/B/1009/12
Change(s) 0 to
1 Incorporated

(2) STATION: Catawba Nuclear

(3) PROCEDURE TITLE: Quantifying Gaseous Release Through Steam-Relief Valves Under Post-Accident Conditions

(4) PREPARED BY: Edwin M. Benfield DATE: 8-6-84

(5) REVIEWED BY: [signature] DATE: 8-6-84

Cross-Disciplinary Review By: _____ N/R: [signature]

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/6/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE P WER COMPANY
CATAWBA NUCLEAR STATION
QUANTIFYING GASEOUS RELEASE THROUGH STEAM-
RELIEF VALVES UNDER POST-ACCIDENT CONDITIONS

1.0 PURPOSE

To describe a method for calculating total noble gas and radioiodine activities released through steam-relief valves under post-accident conditions.

2.0 REFERENCES

2.1 Catawba Nuclear Station FSAR Vol. II, Table 11.1.1-2 and 11.1.1-4

2.2 Catawba Nuclear Station Computer System Documentation, Rev. 9/1/83, Sec. 3.2.19.0, Main Steam Release Monitoring

2.3 Letter from Design Engineering Providing Correlation Curves dated April 30, 1984 CN-1229.01

2.3.1 Figure 1 - Main Steam Line Radiation Monitor Correlation Curve. Correlation Factor, S' vs. Time after Reactor Shutdown.

2.3.2 Figure 2 - Main Steam Line Radiation Monitor Correlation Curve Magnified First Two Minutes Response S' vs. Time.

2.4 ASME Steam Tables

3.0 LIMITS AND PRECAUTIONS

3.1 The value used for specific gravity (.4 $ft^3/lb.$) in Step 4.2.1 is an average based on Tsat of 560°F and Psat of 1100 psia, (Ref. 2.4).

3.2 The Main Steam Release Accumulator Program (MSR) calculates pounds mass (lbm) losses from each steam generator loop. The following table indicates relationship between steam line monitors and steam generator (S/G) loop losses as calculated by MSR, (Ref. 2.2):

1EMF	2EMF	S/G (LOOP)
26	10	S/G A = (PORV (A) + Dump (A) + Safe (A))
27	11	S/G B = (PORV (B) + Dump (B) + Safe (B) + AFWPT (B))
28	12	S/G C = (PORV (C) + Dump (C) + Safe (C) + AFWPT (C))
29	13	S/G D = (PORV (D) + Dump (D) + Safe (D))

3.2.1 The S/G Loop calculations above result in overestimations of losses occurring through loops B and C (accounts for all

AFWPT losses), and underestimates losses occurring through loops A and D (no AFWPT loss accounting).

3.2.2 MSR Program does not account for valve position modulation and overestimates steam loss approximations. Calculations are based on the assumption that valves are fully open when read to be in any condition other than "Closed".

3.3 Reporting requirements of Station Directive 2.8.1 and HP/0/B/1009/02 shall be evaluated to ensure that the Shift Supervisor and/or the Licensing Engineer are informed of the requirements.

4.0 PROCEDURE

4.1 Obtain and record the information listed below on Main Steam Gaseous Activity Release Record, (enclosure 5.1) following a steam release event, when directed:

4.1.1 Unit number.

4.1.2 Date of the steam release.

4.1.3 Time the steam release started.

4.1.4 Time the steam release ended.

4.1.5 Steam-line EMF readings (R/hr).

4.1.5.1 Use the highest steam-line EMF reading that most closely corresponds with steam release event time interval.

4.1.6 Date and time the EMF readings were recorded.

4.1.7 S' value for each steam-line EMF, (Ref. 2.3).

4.1.7.1 Use Figure 2, Main Steam Line Radiation Monitor Correlation Curve Magnified first two minutes response S' vs. time, if steam release event occurs within two minutes of reactor shutdown.

4.1.7.1.1 Locate "hours after Rx trip" on X-axis and move up graph to corresponding S' value on Y-axis.

4.1.7.2 Use Figure 1, Main Steam Line Radiation Monitor Correlation Curve, if steam release event occurs greater than two minutes after reactor trip.

4.1.7.2.1 Locate "hours after Rx trip" on X-axis and move up graph to corresponding S' value on Y-axis.

4.1.8 Total quantity of steam released in pounds mass (lbm) from each steam generator loop.

4.1.9 Reactor trip date and time.

4.2 Calculate total gas activity released from each S/G loop as follows:

4.2.1 $A_{NG(n)} = S' \times EMF\ (R/hr) \times lbm_{S/G(n)} \times 1.13268\ E\text{-}2\ \frac{(Ci)(cc)}{(lb)(\mu Ci)}$

Where: $A_{NG(n)}$ = total noble gas activity release from S/G Loop A, B, C, or D in Curies

$S' = \frac{\mu Ci/cc}{R/hr}$ Xe - equivalent correlation factor from curve (Sample Enclosure 5.2)

EMF = Main Steam - Line Monitor reading in R/hr

$lbm_{S/G(n)X}$ = total quantity of steam released in pounds mass (lbm) for S/G Loop A, B, C, or D. Includes main steam atmospheric dump and AFWTP losses associated with S/G loop.

$1.13268\ E\text{-}2\ \frac{(Ci)(cc)}{(lb)(\mu Ci)}$ = ($.4\ ft^3/lb \times 28317\ cc/ft^3 \times 1E\text{-}6\ Ci/\mu Ci$) constant converting pounds mass to ft^3; cubic feet to cc; and µCi to Curies; such that unit analysis for expression balances to Curies.

4.2.2 Record noble gas activity released per S/G on Enclosure 5.1

4.3 Sum noble gas activities released form contributing S/Gs as follows:

4.3.1 $\Sigma A_{NG} = A_{NG(A)} + A_{NG(B)} + A_{NG(C)} + A_{NG(D)}$

4.3.2 Record sum total of noble gas activities released on Enclosure 5.1.

4.4 Calculate the radioiodine activity released from each S/G loop as follows:

4.4.1 $A_{I(n)} = A_{NG(n)} \times 0.0003$

Where: $A_{I(n)}$ = total iodine activity released from S/G Loop A, B, C, or D.

0.0003 = the fraction of the total noble gas plus iodine activity in the reactor coolant system that is equal to the radioiodine activity; corrected for partition from water to steam (Ref. 2.1).

4.4.2 Record the radioiodine activity release per S/G's on Enclosure 5.1.

4.5 Sum radioiodine activities released from contributing S/Gs as follows:

4.5.1 $\Sigma A_I = A_{I(A)} + A_{I(B)} + A_{I(C)} + A_{I(D)}$

4.5.2 Record sum total of radioiodine activities released on Enclosure 5.1.

4.6 Sign the appropriate line marked "Prepared By" on Enclosure 5.1.

4.7 Record the date and time the calculations were performed on appropriate line of Sample Enclosure 5.1.

4.8 Route results (Enclosure 5.1) to Data Analysis Coordinator.

5.0 ENCLSOURES

5.1 Sample of Main Steam Gaseous Activity Release Record

5.2 Figure 1: Main Steam Line Radiation Monitor Correlation Curve

Figure 2: Main Steam Line Radiation Monitor Correlation Curve Magnified First Two Minutes

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/O/B/1009/12
ENCLOSURE 5.1

MAIN STEAM GASEOUS ACTIVITY RELEASE RECORD

Date/Time _____/_____

Reactor Trip Date/Time _____/_____

Prepared By _____

	Unit No.	Steam Release Time Interval			Steam Line Monitors		Time After Trip (hrs)	S' mci/cc R/hr	Main Steam Release lbm	$(A_{NG(n)})$ Noble Gas Activity Released Per S/G Curies	$(A_{I(n)})$ Iodine Activity Released Per S/G Curies
		Date	Start Time	Stop time	R/hr	Date/ Time					
S/G (A)											
S/G (B)											
S/G (C)											
S/G (D)											
										A_{NG} =	A_{I} =

Date/Time _____/_____

Reactor Trip Date/Time _____/_____

Prepared By _____

	Unit No.	Steam Release Time Interval			Steam Line Monitors		Time After Trip (hrs)	S' mci/cc R/hr	Main Steam Release lbm	$(A_{NG(n)})$ Noble Gas Activity Released Per S/G Curies	$(A_{I(n)})$ Iodine Activity Released Per S/G Curies
		Date	Start Time	Stop time	R/hr	Date/ Time					
S/G (A)											
S/G (B)											
S/G (C)											
S/G (D)											
										A_{NG} =	A_{I} =

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/12
ENCLOSURE 5.2

Main Steam Line Radiation Monitor Correlation Curves. Correlation Factor, S' vs. Time After Reactor Shutdown

See Figure 2 for first 2 minutes of noble gas release.

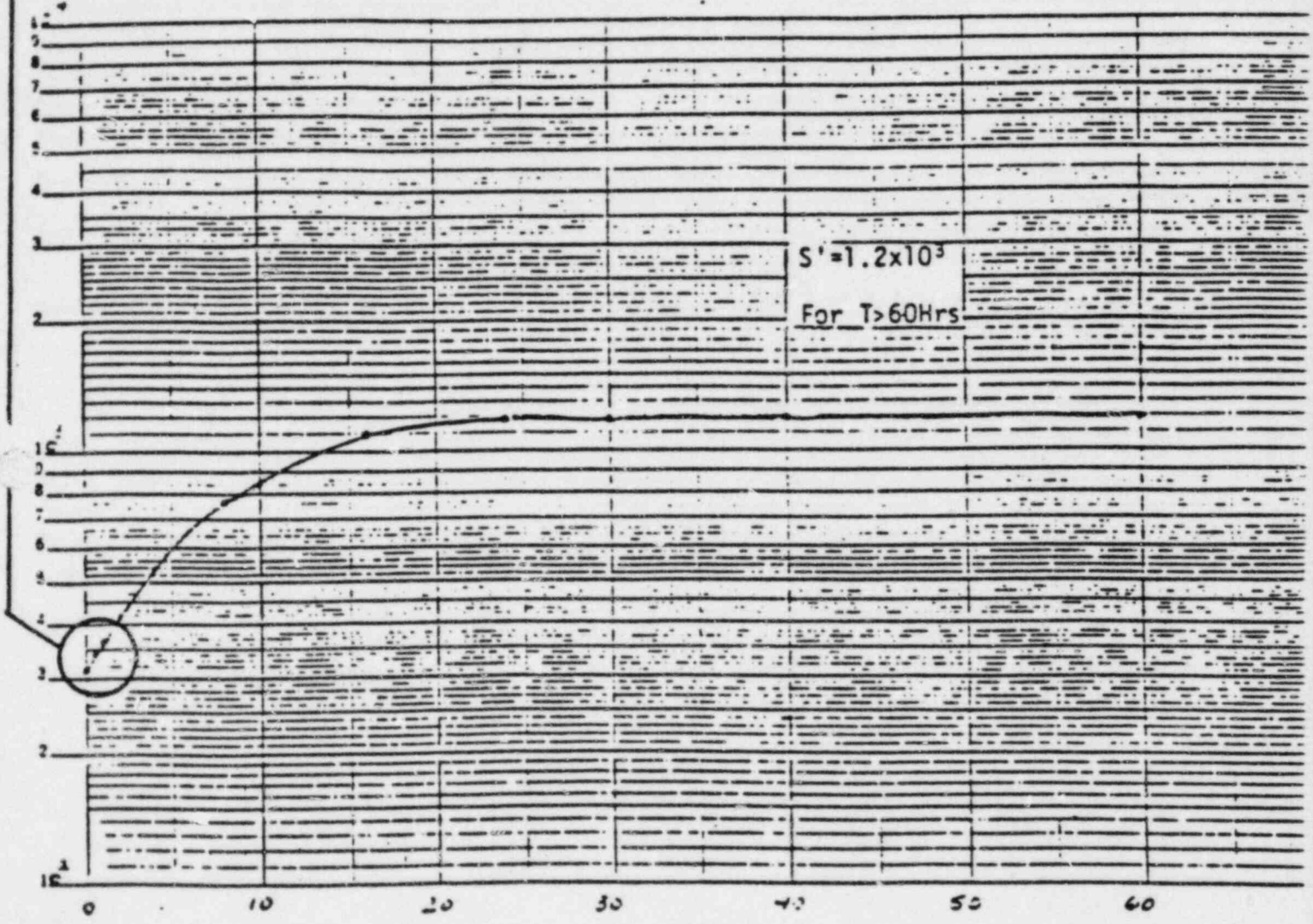


Figure 1 -

Main steam line radiation monitor correlation curve. Correlation Factor, S' vs. time after reactor shutdown.

where S' = $\frac{\text{Xe-133 Equivalent Concentration (uCi/cc)}}{\text{Monitor Dose Rate (R/Hr)}}$

To obtain the Xe-133 equivalent concentration in the main steam line at time T, multiply the main steam line radiation monitor re[illegible]

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/12
ENCLOSURE 5.2

Main Steam Line Radiation Monitor Correlation Curve Magnified First Two Minutes
Response S' vs Time

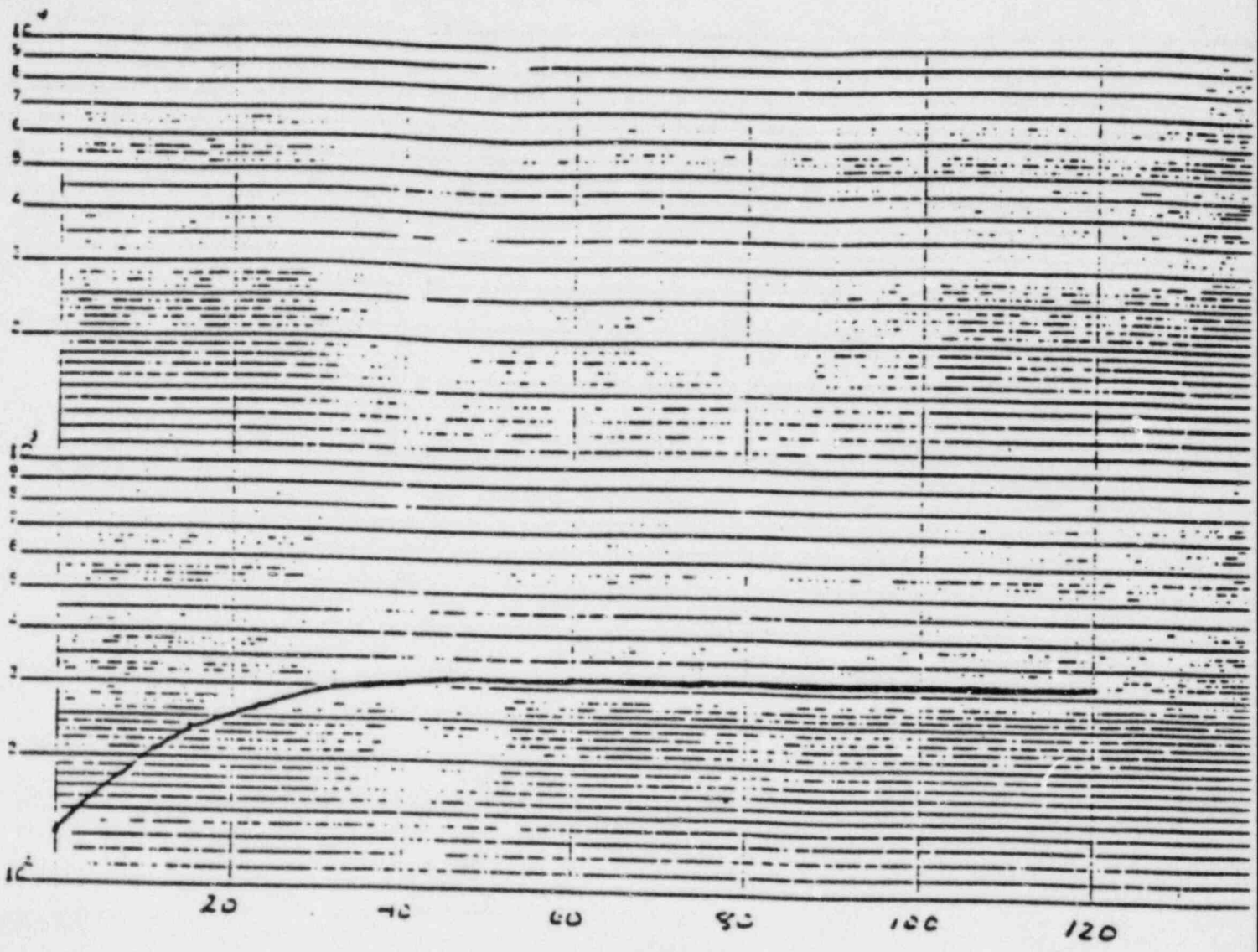


Figure 2 -

Main steam line radiation monitor Correlation Curve Magnified first 2 minute response S' vs. time (0 to 120 seconds) after reactor shutdown.

Note: At 45 seconds and beyond N-16 activity is negligible.

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: HP/O/B/1009/13
Change(s) 0 to
2 Incorporated

(2) STATION: Catawba Nuclear

(3) PROCEDURE TITLE: Offsite Dose Projection - Uncontrolled Release Of Radioactive Material Through The Unit Vent

(4) PREPARED BY: Edwin M. Bufield DATE: 8-6-84

(5) REVIEWED BY: [illegible] DATE: 8-6-84

Cross-Disciplinary Review By: _____ N/R: [illegible]

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [illegible] Date: 8/6/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
OFFSITE DOSE PROJECTION - UNCONTROLLED RELEASE OF RADIOACTIVE MATERIAL THROUGH THE UNIT VENT

1.0 PURPOSE

This procedure describes the method for projecting the potential offsite dose following an uncontrolled release of radioactive materials through the unit vent.

2.0 REFERENCES

2.1 Letter from Civil/Environmental Division CN-1108.1, 1434.00, 1227.00 Atmospheric Dispersion Factor for Emergency Planning

2.2 EPA-520/1-75-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents

2.3 Regulatory Guide 1.109, Calculation of Annual Doses to Man From Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10CFR50, Appendix I

2.4 Regulatory Guide 1.4, Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water Reactors

3.0 LIMITS AND PRECAUTIONS

3.1 Use actual sample data when possible. Radiation monitor readings are susceptible to several sources of error. When radiation monitor readings are used for downwind concentrations, note this in the report of offsite dose assessment.

3.2 Environmental data should be collected and analyzed to verify these calculations. This procedure considers all releases to be ground level releases.

3.3 This procedure applies to releases made from Catawba Nuclear Station only. Many of the values contained in this procedure are site specific.

3.4 Reporting requirements of Station Directive 2.8.1 and HP/0/B/1009/02 shall be evaluated to ensure that the Shift Supervisor and/or the Licensing Engineer are informed of the requirements.

4.0 PROCEDURE

4.1 Obtain the following information from the Control Room and record it on Enclosure 5.1 (Vent Release Data Sheet).

4.1.1 Time of reactor trip.

4.1.2 Tower wind speed in MPH.
(Lower tower wind speed preferred.)

4.1.3 Direction from which the wind is blowing in degrees from North. (Upper tower wind direction preferred.)

4.1.4 Temperature gradient (ΔT) in degrees C.

4.1.5 Vent discharge flow rate in CFM.

4.1.6 Available weather forecast information.

4.2 Determine the release concentration as follows:

4.2.1 If vent sample analysis is <u>not</u> available, go to Step 4.2.4.

4.2.2 Obtain the following vent sample analysis results and record on Enclosure 5.1.

4.2.2.1 Date/time of sample.

4.2.2.2 Gross noble gas concentration in μCi/ml.

4.2.2.3 Iodine equivalent concentration (or data for calculation).

4.2.2.4 Gamma E-bar value in mev/dis (or data for calculation).

4.2.3 Go to Step 4.3

4.2.4 Obtain the following unit vent data and record on sample Enclosure 5.1:

4.2.4.1 Date/Time of collection.

4.2.4.2 EMF36 Low and High range readings in cpm (gas monitor).

4.2.4.3 ΔEMF37 reading in cpm (iodine monitor).

4.2.4.4 Δt in minutes for ΔEMF37 reading.

4.2.4.5 Calculate release concentrations as shown on Enclosure 5.1.

4.3 Project the impact of the release on the downwind population by using the manual calculations outlined below.

4.3.1 Determine the X/Q values for each point of interest downwind as follows.

NOTE: If no points have been requested, use the .5, 2, 5 and 10 mile values.

4.3.1.1 From Enclosure 5.2 (Table of Two-Hour Relative Concentration Factors), locate the relative two hour concentration value (CH) for each point and record on sample Enclosure 5.3 (Manual Calculation Worksheet), (Reference 2.3).

4.3.1.2 Convert these values to X/Q by,

$$X/Q = \frac{CH(MPH\text{-}Sec/m^3)}{\text{Wind Speed (MPH)}}$$

4.3.1.3 Record results on Enclosure 5.3 (Manual Calculation Worksheet).

4.3.2 Calculate the gas and iodine downwind concentrations for each point using the equation,

$$Conc_{DW} = Conc_V \cdot F_V \cdot X/Q \cdot U_{DWC}$$

where,

$Conc_{DW}$ = downwind concentration (µCi/ml)

$Conc_V$ = vent discharge concentration (µCi/ml)

F_V = vent discharge flow rate (CFM)

X/Q = dispersion factor in sec/m^3

U_{DWC} = unit conversions derived from,

$$(2.832E\text{-}2 m^3/ft^3)\ (0.017\ min/sec) = 4.8E\text{-}4\ \frac{m^3 \cdot min}{ft^3 \cdot sec}$$

Sample Enclosure 5.3 provides work space for this calculation.

4.3.3 Determine the potential whole body gamma dose downwind using the gas concentrations calculated in 4.3.2 and the equation,

$$D_{WB} = U_G \cdot \bar{E} \cdot Conc_{DW} \cdot Time$$

where,

D_{WB} = whole body gamma dose due to submersion in a cloud of radioactive gas (rem)

U_G = unit conversion derived from,

3.7E4 (dis/sec-μCi)(1cc/1.2E-3g)

(1.602E-6 erg/MeV) (g - rem/100 ergs)

$\cdot$ 1/2 = 2.5E-1 $\frac{\text{dis-rem-cm}^3}{\mu\text{Ci-sec-MeV}}$

(2.5E-1 $\frac{\text{dis-rem-cm}^3}{\mu\text{Ci-sec-Mev}}$)(3600 $\frac{\text{sec}}{\text{hr}}$)

= 9.00 E2 $\frac{\text{dis-rem-cm}^3}{\mu\text{Ci-hr-Mev}}$

NOTE: 1/2 is the constant used (in the case of gamma radiation) when assuming that the receptor is exposed to only one-half the cloud owing to the presence of the ground, (Reference 2.4).

$Conc_{DW}$ = downwind concentration (μCi/ml)

Time = projected duration of exposure (hrs); use 2 hours unless otherwise directed.

$\bar{E}$ = average gamma energy per disintegration (Mev/dis)

NOTE: If $\bar{E}$ cannot be obtained from the sample results, the following values may be used:

Hours from Trip	$\bar{E}$ (Mev/dis)
0-12	0.40
12-48	0.20
48-∞	0.10

4.3.3.1 Record results on Enclosure 5.3.

4.3.4 Determine the potential child thyroid dose downwind using the iodine concentrations calculated in 4.3.2 and the equation,

$D_{THY} = U_I \cdot Conc_{DW} \cdot Time$

where,

D_{THY} = thyroid dose due to uptake of radioactive iodine (rem)

U_I = constants derived from a child's breathing rate (1.17E2 cc/sec.), I-131 dose conversion factor (4.39 E-3 mrem/pCi), and coversion of pCi to µCi (10^6), mrem to rem (10^{-3}), and hrs. to sec (3600 secs/hr) = 1.86E6 $\frac{cc \cdot Rem}{\mu ci \cdot hr}$

$Conc_D$ = downwind concentration of iodine (µCi/ml)

Time = projected exposure time (hrs); use 2 hours unless otherwise directed.

4.3.4.1 Record results on sample Enclosure 5.3.

4.3.4.2 Project the adult thyroid dose by dividing the child dose by two (2).

4.3.4.3 Record results of all calculations on Enclosure 5.5 (Dose Assessment Report).

4.4 Determine the potentially affected area using the method outlined in Enclosure 5.4.

4.4.1 Record sectors on Enclosure 5.5.

4.5 Complete sample Enclosure 5.5 and submit it to the Station Health Physicist. Include any comments and information pertinent to the evaluation of offsite hazards.

4.6 Maintain a file of all worksheets and printouts used in dose calculations.

5.0 ENCLOSURES

5.1 Sample of Vent Release Data Sheet

5.2 Sample of Table of Two Hour Relative Concentration Factors

5.3 Sample of Manual Calculation Worksheet

5.4 Sample of Evaluation of Plume Location

5.5 Sample of Dose Assessment Report

ENCLOSURE 5.1
HP/0/B/1009/13
VENT RELEASE DATA SHEET

Unit _____ Date/time of Rx trip _____/_____

METEOROLOGICAL DATA

1) Lower Tower Wind Speed _____ MPH

2) Upper Tower Wind Direction From _____ °

3) Temp. Gradient (ΔT) _____ °C

4) Vent Flow _____ CFM

5) Date/time _____/_____

VENT SAMPLE ANALYSIS

1) Total Gas _____ µCi/ml

2) I-131 Equiv. _____ µCi/ml

3) Gas $\bar{E}$ _____ Mev/dis (Gamma)

VENT MONITOR DATA

1) EMF-36L (lo range) _____ CPM

2) EMF-36H (hi range) _____ CPM

3) ΔEMF-37 (iodine) _____ CPM; Δt _____ min

CALCULATED DISCHARGE CONCENTRATION

1) Gas (Use hi readings if EMF-36H is > 100 CPM)

$$Conc_{V\text{-}low} = \frac{(EMF\ 36L\ CPM)}{2.70E7\ \frac{CPM\text{-}ml}{\mu Ci}} = \_\_\_\_\ \mu Ci/ml, \text{ or } Conc_{V\text{-}hi} = \frac{(EMF\text{-}36H\ CPM)}{4.0E3\ \frac{CPM\text{-}ml}{\mu Ci}} =$$

_____ µCi/ml

2) Iodine

$$Conc_{V\text{-}I} = \frac{(\Delta EMF\text{-}37\ CPM)\ \ (2.4E\text{-}10\ \mu Ci\ -\ min)}{\Delta t \qquad\qquad ml\ -\ cpm} = \_\_\_\_\_\ \mu Ci/ml$$

ENCLOSURE 5.2
HP/O/B/1009/13
TWO-HOUR RELATIVE CONCENTRATION FACTORS (CH)

Temperature Difference (°C)	Stability Class	Distance (Miles)										
		.5	1	2	3	4	5	6	7	8	9	10
1) < - .6	A	1.4E-5	1.2E-6	5.9E-7	4.1E-7	3.2E-7	2.5E-7	2.0E-7	1.9E-7	1.8E-7	1.6E-7	1.5E-7
2) -.6 to-.5	B-C	1.5E-4	4.5E-5	1.3E-5	6.3E-6	3.9E-6	2.7E-6	1.9E-6	1.4E-6	1.1E-6	8.3E-7	7.8E-7
3) -0.4 to-0.2	D	3.8E-4	1.4E-4	4.9E-5	2.7E-5	1.7E-5	1.2E-5	9.2E-6	7.3E-6	6.0E-6	5.0E-6	4.3E-6
4) -0.1 to+.4	E	6.9E-4	2.5E-4	9.6E-5	5.5E-5	3.5E-5	2.5E-5	2.0E-5	1.6E-5	1.3E-5	1.1E-5	9.7E-6
5) +.5 to +1.2	F	1.1E-3	5.1E-4	2.0E-4	1.2E-4	8.2E-5	6.3E-5	5.1E-5	4.3E-5	3.8E-5	3.3E-5	3.0E-5
6) > 1.2	G	1.8E-3	1.1E-3	4.3E-4	2.7E-4	2.0E-4	1.7E-4	1.3E-4	1.2E-4	8.6E-5	7.8E-5	7.3E-5

From other sources of meteorological data (Section 4.1) use the wind speed and time of day to determine which row of CH values to use:

Time of Day	Wind Speed	Row #
	N/A	3
10:00 A.M. - 4:00 P.M.	> 15 MPH	4
4:00 P.M. - 10:00 A.M.	≤ 15 MPH	6
4:00 P.M. - 10:00 A.M.		

ENCLOSURE 5.3
HP/O/B/1009/13
MANUAL CALCULATION WORKSHEET

1) Discharge Concentration (Conc V):

Gas = _____ ci/ml

Iodine = _____ ci/ml

2) Vent Discharge Flow Rate:

FV = _____ CFM

3) Wind Speed

_____ MPH

4) Two Hour Relative Conc. Factors

(CH = sec-mph/m^3 X/Q = CH/mph = sec/m^3

CH = _____; X/Q = _____ Sec/m^3 @ _____ Mi

CH = _____; X/Q = _____ Sec/m^3 @ _____ Mi

CH = _____; X/Q = _____ Sec/m^3 @ _____ Mi

CH = _____; X/Q = _____ Sec/m^3 @ _____ Mi

5) Downwind Concentrations:

Conc DW = Conc V o FV o X/Q o (4.7E-4)

A) Gas	B) Iodine
Conc DW = _____ µCi/ml	Conc DW = _____ µCi/ml
Conc DW = _____ µCi/ml	Conc DW = _____ µCi/ml
Conc DW = _____ µCi/ml	Conc DW = _____ µCi/ml
Conc DW = _____ µCi/ml	Conc DW = _____ µCi/ml

6) Potential Whole Body Gamma Dose:

DWB = (9.00E2) o Conc DW o E o Time

Time = _____ hours

E = _____ Mev/dis

DWB = _____ Rem @ _____ Mi.

DWB = _____ Rem @ _____ Mi.

DWB = _____ Rem @ _____ Mi.

DWB = _____ Rem @ _____ Mi.

7) Potential Child Thyroid Dose:

D THY = (1.86E6) o Conc DW o Time

D THY = _____ Rem

D THY = _____ Rem

D THY = _____ Rem

D THY = _____ Rem

ENCLOSURE 5.4
HP/O/B/1009/13
EVALUATION OF PLUME LOCATION

1. Acquire the following information from Enclosure 5.1 and record on Enclosure 5.5.

   a) wind direction in degrees from north

   b) wind speed (mph)

   c) ΔT (°C)

   d) Stability Class

   e) thyroid and whole body doses

2. Protective action guides submitted to the Station Health Physicist are to be made based on the calculated dose on Enclosure 5.1 and the following information.

   a) For doses:

      > 5 Rem Whole Body or,

      > 25 Rem Thyroid

      Recommend Evacuation of Population in Affected Area.

   B) For doses:

      1-5 Rem Whole Body or,

      5-25 Rem Thyroid

      Recommend evacuation of children and pregnant women, and sheltering of remainder of personnel in the affected area.

   C) For doses:

      < 1 Rem Whole Body or,

      < 5 Rem Thyroid

      Recommend no action.

3. Determine the affected zones, based on wind direction and wind speed, with the following tables.

Table 3.1 0-2 Mile Affected Zones

Wind Direction	Affected Zone
0° - 360°	AO

ENCLOSURE 5.4
HP/O/B/1009/13
EVALUATION OF PLUME LOCATION

Table 3.2 2-5 Mile Affected Zones

Wind Speed < 5 mph

Wind Direction	Affected Zones
0° - 360°	A1,B1,C1,D1,E1,F1

Wind Speed > 5 mph

Wind Direction	Affected Zones
0.1° - 22°	C1, D1
22.1° - 73°	C1, D1, E1
73.1° - 108°	C1, D1, E1, F1
108.1° - 120°	D1, E1, F1
120.1° - 159°	E1, F1
159.1° - 207°	E1, F1, A1
207.1° - 247°	F1, A1, B1
247.1° - 265°	A1, B1
265.1° - 298°	A1, B1, C1
298.1° - 338°	B1, C1
338.1° - 360°	B1, C1, D1

Table 3.3 5-10 Mile Affected Zones

Wind Direction	Affected Zones
0.1° - 27°	C2, D2
27.1° - 69°	C2, D2, E2
69.1° - 95°	D2, E2, F2
95.1° - 132°	D2, E2, F2, F3
132.1° - 144°	E2, F2, F3
144.1° - 160°	E2, F2, F3, A2
160.1° - 201°	F2, F3, A2
201.1° - 229°	F2, F3, A2, B2
229.1° - 249°	F3, A2, B2
249.1° - 259°	A2, A3, B2
259.1° - 290°	A2, A3, B2, C2
290.1° - 304°	A3, B2, C2
304.1° - 333°	B2, C2
333.1° - 360°	B2, C2, D2

4. Record sectors requiring protective action on Sample Enclosure 5.5 along with the recommended protective action.

ENCLOSURE 5.5
DOSE ASSESSMENT REPORT
HP/O/B/1009/13

Duke Power Company Crisis Management Plan Off-Site Dose Report - Catawba

Prepared By _____ Date/Time _____/_____ Emergency Drill (Circle One)

Meteorology

Wind Speed	_____	MPH
Wind Direction	_____	Degrees from North
Vertical Temp. Diff.	_____	Degrees C/100ft.
Stability Class (Circle One)		A B C D E F E

Source Term	Time	Noble Gas	1-31 ea.
Containment Rad. Monitor	_____	_____ R/hr.	_____ R/hr
Containment Sample	_____	_____ µCi/ml	_____ µCi/ml
Unit Vent (Sample or EMF)	_____	_____ µCi/ml	_____ µCi/ml
Curie Release Rate	_____	_____ Ci/sec	_____ Ci/sec

Corresponds to:

_____ LOCA		_____ LOCA through filter	
_____ Core Damage		_____ Core Damage through filter	
_____ Tube rupture		_____ Gas Decay Tank	
_____ New Fuel		_____ Old fuel	_____ Other

Dose Projections

		.5 mi	2 mi	5 mi	10 mi
2 hr Dose (rem) based on Containment release @ _____ ml/hr	Whole Body	_____	_____	_____	_____
	Child thyroid	_____	_____	_____	_____
2 hr Dose (rem) based on Unit Vent release @ _____ cfm	Whole Body	_____	_____	_____	_____
	Child thyroid	_____	_____	_____	_____
2 hr Dose (rem) based on Steam release @ _____	Whole Body	_____	_____	_____	_____
	Child thyroid	_____	_____	_____	_____
2 hr Dose (rem) based on _____ release @ _____	Whole Body	_____	_____	_____	_____
	Child thyroid	_____	_____	_____	_____

Field Monitoring Data

Location	Distance (mi)	Direction	Dose Rate (mrem/hr) Whole Body	Child Thyroid	Contamination (dpm/100 cm2)
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Affected Zones (Circle Zones)	0-2 mi	2-5 mi	5-10 mi	9-10 mi
	A0	A1 B1 C1 D1 E1 F1	A2 B2 C2 D2 E2 F2	A3 F3

Comments: _____

XC: Data Analysis Coordinator, Station Health Physicist

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: HP/0/B/1009/14
Change(s) 0 to
1 Incorporated

(2) STATION: Catawba Nuclear

(3) PROCEDURE TITLE: Health Physics Actions Following An Uncontrolled Release Of Liquid Radioactive Material

(4) PREPARED BY: Edwin M. Burfield DATE: 8-6-84

(5) REVIEWED BY: Gerald T. Noble DATE: 8-6-84

Cross-Disciplinary Review By: _____ N/R: G T Noble

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: J. W. Cox Date: 8/6/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HEALTH PHYSICS ACTIONS FOLLOWING AN UNCONTROLLED RELEASE OF LIQUID RADIOACTIVE MATERIAL

1.0 PURPOSE

This procedure describes the methods to be used for calculating the radionuclide concentration at area water intakes following an uncontrolled release of liquid radioactive material, and the subsequent actions to be taken when the concentration exceeds Technical Specifications.

2.0 REFERENCES

2.1 HP/0/B/1009/04, Environmental Monitoring for Emergency Conditions Within the Ten Mile Radius of Catawba Nuclear Station

2.2 Control Room Unit Data Book

2.3 10CFR20, Appendix B, Table II, Column 2

2.4 CNS FSAR Sections 2, 11, 12 and 15

2.5 CNS Technical Specifications Sections 3/4.3, 3/4.11 and 5.0

2.6 Letter to Master File CN-1227.00 Dilution Factor - Rock Hill Intake from Design Engineering dated February 23, 1983

2.7 CNS Emergency Plan

3.0 LIMITS AND PRECAUTIONS

3.1 The full implementation of this procedure should be used in emergency situations that could result in the contamination and possible shutdown of area water supply intakes.

3.2 Full implementation of the protective actions in this procedure require station management authorization.

3.3 This procedure is for use under abnormal conditions and results in conservative recommendations. Care must be exercised to ensure only appropriate actions are taken.

3.4 Conservatism exists in the calculations utilized in this procedure and includes, but is not limited to:

3.4.1 Decay

3.4.2 Dilution factor

3.5 Transit time from CNS to the nearest municipal water intake is reduced from three days to one-half day under extreme meteorological conditions (Ref CNS FSAR 2.4.12).

3.6 Reporting requirements of Station Directive 2.8.1 and HP/0/B/1009/02 shall be evaluated to ensure that the Shift Supervisor and/or the Licensing Engineer are informed of the requirements.

4.0 PROCEDURE

4.1 Health Physics will determine concentration of effluent released from site boundary by the following method(s):

4.1.1 Determine effluent concentration from EMF-49 if possible. Concentration may be determined from analysis of sample drawn directly from EMF sample tap, if necessary.

NOTE: Conversion graph for EMF data from CPM to uCi/ml located in Control Room Unit Data Book.

4.1.2 Determine effluent concentration from volume and activity if release is made from other than through Waste Liquid System, if possible.

4.1.3 Collect representative sample from Environmental Sampling Pier (Location Site #A0 1 46) at Station Service Water Discharge Canal and analyze sample for concentration.

4.1.4 Should utilize most restrictive (highest) concentration from applicable procedure Steps 4.1.1, 4.1.2, 4.1.3 above.

4.2 Determine the potential for contamination of area water supplies using Enclosure 5.1 (Transit Time/Radionuclide Concentration Calculations) and sampling data from Health Physics.

4.3 If data indicates that a release made through the Station Service Water Discharge Canal to Lake Wylie will exceed 10CFR20, Appendix B, Table II, Column 2 limits at affected area water intakes, Health Physics shall recommend the following to the Emergency Coordinator:

4.3.1 Request minimum flow at Lake Wylie Hydro Station from System Load Dispatcher (to extend transit time).

NOTE: Transit time to Rock Hill water intake is approximately 14 days with NO FLOW through Lake Wylie Dam, (based on dam leakage rate).

4.3.2 Request Field Monitoring Teams (FMT) to track the release by sampling and evaluation of sample concentrations taken from discharge point at Environmental Sampling Pier (Location Site # A0 1 46), above Lake Wylie Dam (Location Site # B1 4 5), directly below Lake Wylie Dam (Location Site # B1 4 6), and at Rock Hill municipal water intake structure (Location Site # C2 7 8), per Ref. 2.1, as deemed necessary.

NOTE: Transit time is calculated as three days under normal meteorological conditions with all units in operation at Lake Wylie Hydro Station.

4.3.3 Notify (through the State) the area water supply pumping stations that a release of radioactive materials to Lake Wylie has occurred and that limited protective actions (sampling and analysis) are being taken.

4.3.3.1 In the event that sampling confirms the contamination levels at area water intakes will exceed 10CFR20, Appendix B, Table II, Column 2 limits, request (through the state) that area water pumping stations cease operations during the period of time contaminated water is passing the pumping station intakes (see Enclosure 5.2).

4.3.4 Request System Load Dispatcher regulate flow through dam as required.

NOTE: Maximum flow through dam will allow "boxcar" to pass critical areas in least time.

4.4 Discontinue environmental surveillance efforts when concentration (contamination levels) indicate that protective actions are no longer appropriate.

5.0 ENCLOSURES

5.1 Transit Time/Radionuclide Concentration Calculation

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/14
SAMPLE ENCLOSURE 5.1

TRANSIT TIME/RADIONUCLIDE CONCENTRATION CALCULATION

DESCRIPTION

Transit time(s) and radionuclide concentration(s) for an uncontrolled release of liquid radioactive materials from a Catawba Nuclear Station release point to the municipal (or industrial) water intake structures of Rock Hill, Celanese Fibers Company (Rock Hill), Fort Mill and Springs Mills, Inc. (Fort Mill).

NOTE #1: All municipal or industrial water intake concentration calculations are based on Rock Hill water intake sampling point unless specified otherwise by Station Health Physicist or Emergency Coordinator.

CNS Discharge Point	Formula Test Criteria	Water Intake	Transit Time (NOTE #2)	Dilution ($\frac{1}{ft^3}$) Factor	Formula Required
via WL System (dischg header)	Conc and Vol known	Rock Hill	3 days	4×10^{-9}	#1
other than WL System	Conc and Vol known	Rock Hill	3 days	4×10^{-9}	#2
via WL System (dischg header)	Conc and Vol unknown	Rock Hill	3 days	4×10^{-9}	#3
other than WL System	Conc and Vol unknown	Rock Hill	3 days	4×10^{-9}	#3

NOTE #2: Transit time assumes all units in operation at Lake Wylie Hydro Station.

FORMULAS:

#1 - $C_w = C_o \times D \times \{\text{time } (RR_e + RR_d)\} \times \frac{RR_e}{RR_d}$

#2 - $C_w = C_o \times D \times V_k$

#3 - $C_w = C_o \times D \times V_c$ (see NOTE #3)

Where:

C_w = Radionuclide concentration at municipal water intake (uCi/ml)

C_o = Undiluted discharge point concentration (uCi/ml)

D = dilution factor (4×10^{-9} $\frac{1}{ft^3}$)

time = taken from WL Release Worksheet (sec) - (time WMT pump is running)

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/14
SAMPLE ENCLOSURE 5.1
TRANSIT TIME/RADIONUCLIDE CONCENTRATION CALCULATION

RR_e = effluent release rate (cfs) - (from WL Release Worksheet)

RR_d = RL (and RN) flow rate(s) (cfs)

$\frac{RR_e}{RR_d}$ = dilution variable (no units)

V_k = known volume (ft^3)

V_c = 13,268,000 ft^3 (discharge canal volume)

Conversion Factors: cfs = (2.22×10^{-3} cfs/gpm (Xgpm)

ft^3 = gal/7.481

NOTE #3: When using formula #3, must assume entire contents of discharge canal as effluent release and evaluated sample concentration as C_o (Undiluted effluent concentration).

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: HP/0/B/1009/15
Change(s) 0 to
1 Incorporated

(2) STATION: Catawba Nuclear

(3) PROCEDURE TITLE: Uncontrolled Release Of Gaseous Radioactive Material Other Than Through The Unit Vent

(4) PREPARED BY: Edwin M. Burfield DATE: 8-6-84

(5) REVIEWED BY: [signature] DATE: 8-6-84

Cross-Disciplinary Review By: _____ N/R: [signature]

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [signature] Date: 8/6/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
OFFSITE DOSE PROJECTIONS
UNCONTROLLED RELEASE OF GASEOUS RADIOACTIVE MATERIAL
OTHER THAN THROUGH THE UNIT VENT

1.0 PURPOSE

To describe an approved method for projecting dose commitment from a noble gas or iodine release, other than a unit vent release, during an emergency.

2.0 REFERENCES

2.1 Reg Guide 1.109

2.2 Reg Guide 1.4

2.3 HP/0/B/1009/06, Alternative Method for Determining Dose Rate Within the Reactor Building

2.4 Variables used in HP/0/B/1009/15, Letter File Number CN.: 134.10

3.0 LIMITS AND PRECAUTIONS

3.1 It is assumed that the whole body dose from a release is very small compared to the iodine thyroid dose. Thus, iodine whole body dose is not considered here.

3.2 This procedure applies to releases made from Catawba Nuclear Station only. Many of the values contained in this procedure are site specific.

3.3 This procedure considers all releases to be ground level releases.

3.4 Reporting requirements of Station Directive 2.8.1 and HP/0/B/1009/02 shall be evaluated to ensure that the Shift Supervisor and/or Licensing Engineer are informed of the requirements.

4.0 PROCEDURE

4.1 Acquire the following information and record on sample Enclosure 5.1.

NOTE: Should site meteorological data be unavailable, obtain wind speed and wind direction from the National Weather Service (United States Government - National Oceanic & Atmospheric Administration).

NOTE: If appropriate, obtain advance meteorological data to calculate doses due to changing meteorological conditions.

4.1.1 Reactor Unit, date and time of reactor trip.

4.1.2 Lower tower wind speed (mph).

4.1.3 Tower wind direction in degrees from North (North = 0°).

4.1.4 Temperature gradient ($\Delta T^{\circ}C$).

4.1.5 Radiation Monitor (EMF 53A or 53B) reading (R/hr) or calculated per Reference 2.3.

4.1.6 Date and time of calculations.

4.2 Determine the Containment Building leakage rate (LR) and record it on sample Enclosure 5.1.

4.2.1 LR (ml/hr) is the total leak rate for the containment which is one of the following:

4.2.1.1 a "best guess" assumption,

4.2.1.2 the measured leak rate where suitable means are available;

4.2.1.3 The design leakage rate (LR_{DLR}) which is determined by:

$$LR_{DLR} = \text{Containment Volume} \cdot \text{Design Leak Constant}$$

$$= 2.83 \times 10^{10}\ \text{ml} \cdot \frac{0.0025}{\text{day}} \cdot \frac{\text{day}}{24\ \text{hr}}$$

$$= 2.95 \times 10^{6}\ \text{ml/hr}$$

4.3 Determine the X/Q values for each point of interest downwind and record on sample Enclosure 5.1.

If no points have been requested, use the .5, 2, 5 and 10 mile values.

4.3.1 Locate the relative two-hour downwind concentration value (CH) for each point from sample Enclosure 5.2 and record onto sample Enclosure 5.1.

4.3.2 Convert these values to X/Q by,

$$X/Q = \frac{CH\ (\text{MPH-Sec/m}^3)}{\text{Tower Wind Speed (MPH)}}$$

4.4 Determine the potential whole body dose from submersion in a cloud of noble gas and record on sample Enclosure 5.1.

4.4.1 Calculate the whole body two (2) hour dose commitment,

$$D_{WB} = DR_{M} \cdot ADC \cdot LR \cdot X/Q \cdot U_{NG}$$

Where,

D_{WB} = Whole body two (2) hour dose commitment

DR_M = Monitor dose rate

ADC = Average Decay constant for noble gases =

$$2.2622E\text{-}2 \ \frac{\mu Ci \cdot MeV \cdot hr2}{ml \cdot d \cdot R}$$

LR = Containment leakage rate in ml/hr

X/Q = dispersion factor in sec/m^3

$$U_{NG} = \frac{(3.7E4/sec \cdot \mu Ci)\ (1.6E\text{-}6ergs/MeV)}{2\ (100\ ergs/g\text{-}rad)\ (1.2E\text{-}3g/cm^3)\ (1E6cm^3/m^3)} =$$

$$5.7E\text{-}9 \ \frac{hr^2\text{-}m^3 - rad}{ml\text{-}R\text{-}sec}$$

4.5 Determine the potential thyroid dose from uptake of radioiodine and record on sample Enclosure 5.1.

4.5.1 Locate the time plus one (1) hour after trip on Enclosure 5.3 and record the corresponding Decay Constant on Enclosure 5.1.

4.5.2 Calculate a child's thyroid two (2) hour dose commitment using time plus one (1) hour,

$$DR_T = DR_M \cdot DC \cdot LR \cdot X/Q \cdot U_I$$

Where,

DR_T = thyroid two (2) hour dose commitment

DR_M = monitor dose rate

DC = Decay Constant in $\frac{\mu Ci \cdot mrem \cdot hr^2}{ml \cdot pCi \cdot R}$ for time plus one (1) hour (see sample Enclosure 5.3)

LR = Leak rate in ml/hr

X/Q dispersion in sec/m^3

U_I = breathing rate for child times µCi to ρCi conversion factor

$$(1.17E\text{-}4m3/sec)\ \ 1E3\ \frac{\rho Ci\text{-}rem}{\mu Ci\text{-}mrem} = 1.17E\text{-}1\ \frac{m^3\text{-}\rho Ci\text{-}rem}{Sec\ \text{-}\mu Ci\text{-}mrem}$$

4.6 Determine the potentially affected area using Enclosure 5.4. Record the affected zones on Enclosure 5.5.

4.8 Complete sample Enclosure 5.5 and submit it to the Data Analysis Coordinator. Include any comments pertinent to the evaluation of offsite hazards.

5.0 ENCLOSURES

5.1 Sample Projected Offsite Dose Released From Containment

5.2 Sample Table of Two Hour Relative Concentration Factors (C_H)

5.3 Sample Table of Iodine and Noble Decay Constant (DC)

5.4 Sample of Evaluation of Plume Location

5.5 Sample Dose Assessment Report

5.6 Estimation of Containment Leak Rate

ENCLOSURE 5.1
HP/0/B/1009/15
PROJECTED OFFSITE DOSE RELEASED FROM CONTAINMENT

Unit _____ Date/Time of Reactor Trip _____/_____

METEOROLOGICAL DATA

1. Lower Tower wind speed _____ mph
2. Upper Tower wind direction _____ °
3. Temperature gradient (ΔT) _____ °C

MONITOR DATA

1. EMF 53A or 53B/Survey Inst. # _____, DR_M = _____ R/hr
   (Circle One)

   NOTE: If containment monitor information is not useable, refer to Reference 2.3.

DOSE CALCULATION DATE/TIME _____

1. LR _____ ml/hr
2. C_H @ _____ mi. = _____, X/Q = _____ sec/m^3
   C_H @ _____ mi. = _____, X/Q = _____ sec/m^3
   C_H @ _____ mi. = _____, X/Q = _____ sec/m^3
   C_H @ _____ mi. = _____, X/Q = _____ sec/m^3

   A. Whole Body 2 hr. dose projection from noble gases:

   by $D_{WB} = DR_M \cdot LR \cdot X/Q \cdot 5.7E\text{-}9$,

Miles Out	D_{WB} 2 hr Dose Commitment
_____	_____
_____	_____
_____	_____
_____	_____

ENCLOSURE 5.1
HP/0/B/1009/15
PROJECTED OFFSITE DOSE RELEASED FROM CONTAINMENT

B. Thyroid 2 hr. dose projection from iodine:

DC _____,

by $DR_T = DR_M \cdot DC \cdot LR \cdot X/Q \cdot (1.17E\text{-}1)$,

Miles Out	D_T 2 hr Dose Committment
_____	_____
_____	_____
_____	_____
_____	_____

DEFINITIONS

D_{WB} = whole body 2 hour dose commitment from noble gases

DR_T = thyroid 2 hr dose commitment from iodine

LR = containment leakage rate

X/Q = "Chi over Q" is downwind concentration correction factor

C_H = 2 hr relative downwind concentration - MPH (X/Q • MPH)

DC = Decay constant

DR_M = dose rate at the containment monitor

ENCLOSU[illegible]
HP/O/B/1009/15

TWO-HOUR RELATIVE CONCENTRATION FACTORS (C_H)

Temperature Difference (°C)	Stability Class	Distance (Miles)										
		.5	1	2	3	4	5	6	7	8	9	10
1) < -.6	A	1.4E-5	1.2E-6	5.9E-7	4.1E-7	3.2E-7	2.5E-7	2.0E-7	1.9E-7	1.8E-7	1.6E-7	1.5E-7
2) -.6 to -.5	B	1.5E-4	4.5E-5	1.3E-5	6.3E-6	3.9E-6	2.7E-6	1.9E-6	1.4E-6	1.1E-6	8.3E-7	7.8E-7
3) -0.4 to -0.2	C	3.8E-4	1.4E-4	4.9E-5	2.7E-5	1.7E-5	1.2E-5	9.2E-6	7.3E-6	6.0E-6	5.0E-6	4.3E-6
4) -0.1 to +.4	D	6.9E-4	2.5E-4	9.6E-5	5.5E-5	3.5E-5	2.5E-5	2.0E-5	1.6E-5	1.3E-5	1.1E-5	9.7E-6
5) +.5 to +1.2	E	1.1E-3	5.1E-4	2.0E-4	1.2E-4	8.2E-5	6.3E-5	5.1E-5	4.3E-5	3.8E-5	3.3E-5	3.0E-5
6) > 1.2	F	1.8E-3	1.1E-3	4.3E-4	2.7E-4	2.0E-4	1.7E-4	1.3E-4	1.2E-4	8.6E-5	7.8E-5	7.3E-5

From other sources of meteorological data (Section 4.1) use the wind speed and time of day to determine which row of C_H values to use:

Time of Day	Wind Speed	Row #
10:00 A.M. - 4:00 P.M.	N/A	3
4:00 P.M. - 10:00 A.M.	> 15 MPH	4
4:00 P.M. - 10:00 A.M.	≤ 15 MPH	6

ENCLOSURE 5.0
TABLE
IODINE & NOBLE DECAY CONSTANT(DC)
0 - 498 HRS
HP/0/B/1009/15

HOUR	DC	HOUR	DC	HOUR	DC	HOUR	DC	HOUR	DC
0	2.0649E-05	100	5.6125E-04	200	6.8707E-04	300	7.4438E-04	400	7.9109E-04
2	5.7902E-05	102	5.6595E-04	202	6.8925E-04	302	7.4537E-04	402	7.9197E-04
4	8.1506E-05	104	5.7050E-04	204	6.9060E-04	304	7.4636E-04	404	7.9285E-04
6	1.0296E-04	106	5.7492E-04	206	6.9194E-04	306	7.4735E-04	406	7.9373E-04
8	1.2295E-04	108	5.7920E-04	208	6.9326E-04	308	7.4833E-04	408	7.9460E-04
10	1.4170E-04	110	5.8335E-04	210	6.9457E-04	310	7.4932E-04	410	7.9548E-04
12	1.5933E-04	112	5.8737E-04	212	6.9586E-04	312	7.5029E-04	412	7.9635E-04
14	1.7591E-04	114	5.9127E-04	214	6.9714E-04	314	7.5127E-04	414	7.9722E-04
16	1.9159E-04	116	5.9504E-04	216	6.9840E-04	316	7.5224E-04	416	7.9809E-04
18	2.0648E-04	118	5.9870E-04	218	6.9965E-04	318	7.5321E-04	418	7.9896E-04
20	2.2071E-04	120	6.0225E-04	220	7.0089E-04	320	7.5418E-04	420	7.9982E-04
22	2.3439E-04	122	6.0569E-04	222	7.0212E-04	322	7.5515E-04	422	8.0068E-04
24	2.4757E-04	124	6.0903E-04	224	7.0333E-04	324	7.5611E-04	424	8.0155E-04
26	2.6034E-04	126	6.1226E-04	226	7.0454E-04	326	7.5707E-04	426	8.0240E-04
28	2.7272E-04	128	6.1540E-04	228	7.0574E-04	328	7.5803E-04	428	8.0326E-04
30	2.8475E-04	130	6.1844E-04	230	7.0692E-04	330	7.5899E-04	430	8.0412E-04
32	2.9645E-04	132	6.2140E-04	232	7.0810E-04	332	7.5994E-04	432	8.0497E-04
34	3.0784E-04	134	6.2426E-04	234	7.0926E-04	334	7.6089E-04	434	8.0583E-04
36	3.1893E-04	136	6.2705E-04	236	7.1042E-04	336	7.6184E-04	436	8.0668E-04
38	3.2975E-04	138	6.2975E-04	238	7.1157E-04	338	7.6279E-04	438	8.0753E-04
40	3.4029E-04	140	6.3238E-04	240	7.1272E-04	340	7.6373E-04	440	8.0837E-04
42	3.5058E-04	142	6.3493E-04	242	7.1385E-04	342	7.6467E-04	442	8.0922E-04
44	3.6062E-04	144	6.3741E-04	244	7.1498E-04	344	7.6561E-04	444	8.1006E-04
46	3.7042E-04	146	6.3983E-04	246	7.1610E-04	346	7.6655E-04	446	8.1090E-04
48	3.7999E-04	148	6.4218E-04	248	7.1721E-04	348	7.6748E-04	448	8.1174E-04
50	3.8933E-04	150	6.4447E-04	250	7.1832E-04	350	7.6842E-04	450	8.1258E-04
52	3.9846E-04	152	6.4670E-04	252	7.1942E-04	352	7.6935E-04	452	8.1342E-04
54	4.0738E-04	154	6.4887E-04	254	7.2051E-04	354	7.7028E-04	454	8.1425E-04
56	4.1609E-04	156	6.5099E-04	256	7.2160E-04	356	7.7120E-04	456	8.1509E-04
58	4.2460E-04	158	6.5306E-04	258	7.2268E-04	358	7.7213E-04	458	8.1592E-04
60	4.3291E-04	160	6.5508E-04	260	7.2376E-04	360	7.7305E-04	460	8.1675E-04
62	4.4103E-04	162	6.5705E-04	262	7.2483E-04	362	7.7397E-04	462	8.1757E-04
64	4.4896E-04	164	6.5897E-04	264	7.2590E-04	364	7.7489E-04	464	8.1840E-04
66	4.5669E-04	166	6.6085E-04	266	7.2696E-04	366	7.7581E-04	466	8.1923E-04
68	4.6425E-04	168	6.6269E-04	268	7.2802E-04	368	7.7672E-04	468	8.2005E-04
70	4.7161E-04	170	6.6450E-04	270	7.2907E-04	370	7.7763E-04	470	8.2087E-04
72	4.7879E-04	172	6.6626E-04	272	7.3012E-04	372	7.7854E-04	472	8.2169E-04
74	4.8579E-04	174	6.6799E-04	274	7.3116E-04	374	7.7945E-04	474	8.2250E-04
76	4.9262E-04	176	6.6969E-04	276	7.3220E-04	376	7.8036E-04	476	8.2332E-04
78	4.9926E-04	178	6.7135E-04	278	7.3323E-04	378	7.8126E-04	478	8.2413E-04
80	5.0573E-04	180	6.7298E-04	280	7.3427E-04	380	7.8217E-04	480	8.2495E-04
82	5.1202E-04	182	6.7458E-04	282	7.3529E-04	382	7.8307E-04	482	8.2576E-04
84	5.1815E-04	184	6.7615E-04	284	7.3632E-04	384	7.8397E-04	484	8.2657E-04
86	5.2410E-04	186	6.7770E-04	286	7.3734E-04	386	7.8486E-04	486	8.2737E-04
88	5.2989E-04	188	6.7922E-04	288	7.3835E-04	388	7.8576E-04	488	8.2818E-04
90	5.3551E-04	190	6.8072E-04	290	7.3934E-04	390	7.8665E-04	490	8.2898E-04
92	5.4097E-04	192	6.8219E-04	292	7.4037E-04	392	7.8754E-04	492	8.2978E-04
94	5.4627E-04	194	6.8364E-04	294	7.4138E-04	394	7.8843E-04	494	8.3058E-04
96	5.5142E-04	196	6.8507E-04	296	7.4238E-04	396	7.8932E-04	496	8.3138E-04
98	5.5641E-04	198	6.8648E-04	298	7.4338E-04	398	7.9020E-04	498	8.3218E-04

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
ENCLOSURE 5.4
HP/0/B/1009/15
EVALUATION OF PLUME LOCATION

5.4.1. Acquire the following information from sample Enclosure 5.1 and record on sample Enclosure 5.5.

5.4.1.1 Wind direction in degrees from North

5.4.1.2 Wind speed (mph)

5.4.1.3 ΔT (°C)

5.4.1.4 Stability class

5.4.1.5 Thyroid and whole body dose

5.4.2. Determine the affected zones, based on wind direction and wind speed, with the following tables:

Table 3.1 0-2 Mile Affected Zones

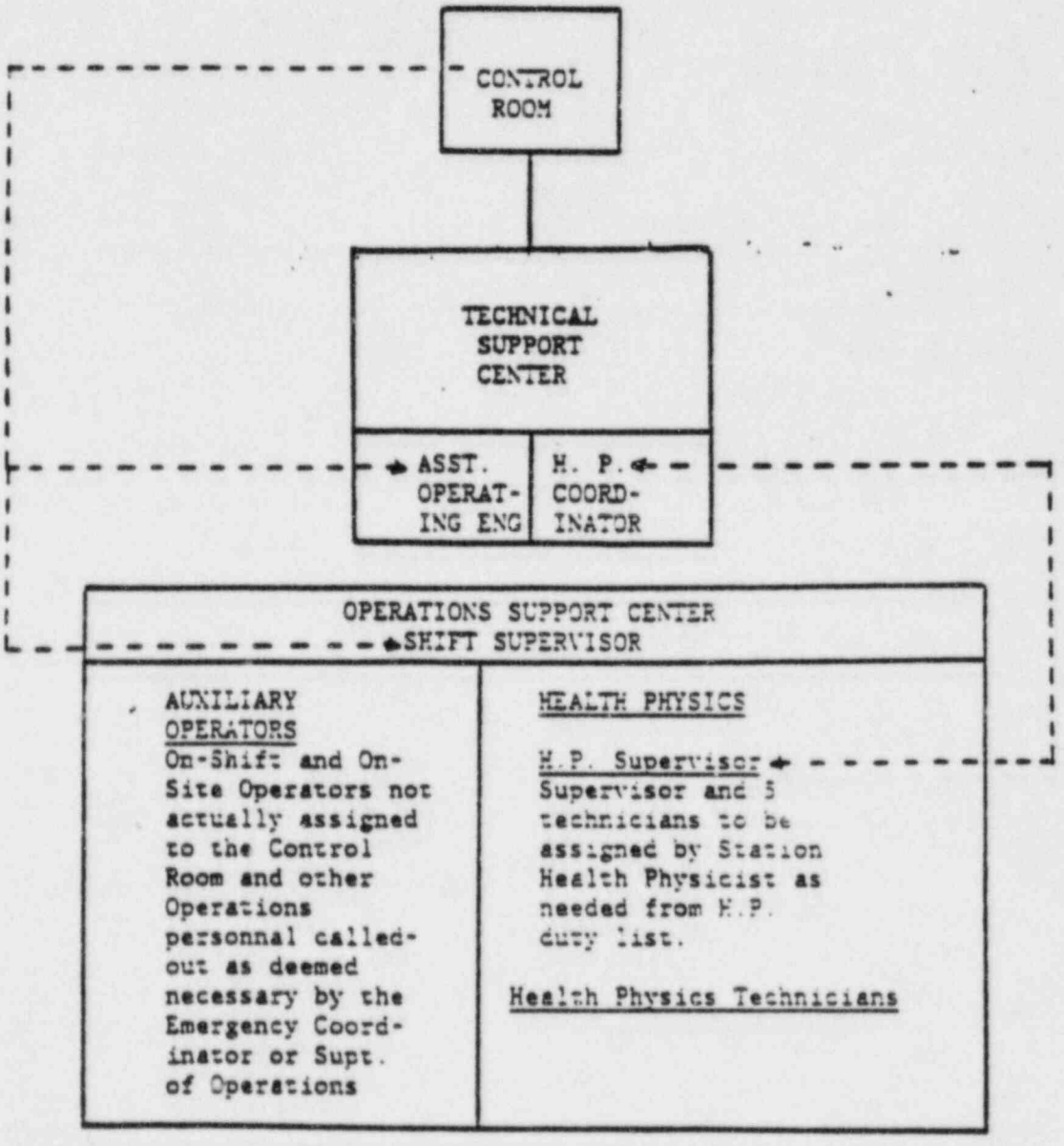
Wind Direction	Affected Zones
0° - 360°	AO

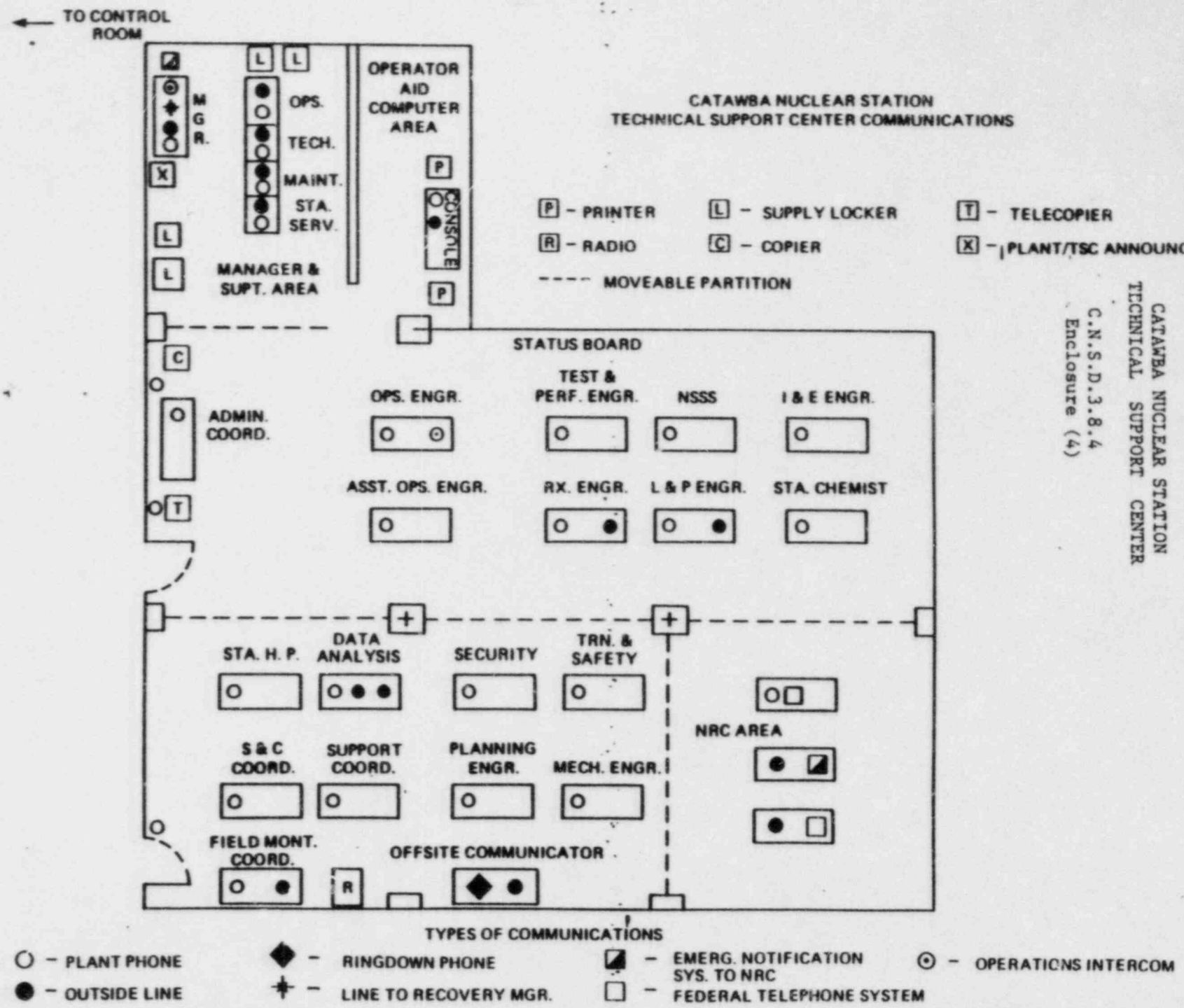
Table 3.2 2-5 Mile Affected Zones

Wind Speed < 5 mph		Wind Speed > 5 mph	
Wind Direction	Affected Zones	Wind Direction	Affected Zones
0° - 360°	A1,B1,C1,D1,E1,F1	0.1° - 22°	C1, D1
		22.1° - 73°	C1, D1, E1
		73.1° - 108°	C1, D1, E1, F1
		108.1° - 120°	D1, E1, F1
		120.1° - 159°	E1, F1
		159.1° - 207°	E1, F1, A1
		207.1° - 247°	F1, A1, B1
		247.1° - 265°	A1, B1
		265.1° - 298°	A1, B1, C1
		298.1° - 338°	B1, C1
		338.1° - 360°	B1, C1, D1

ONSITE EMERGENCY ORGANIZATION

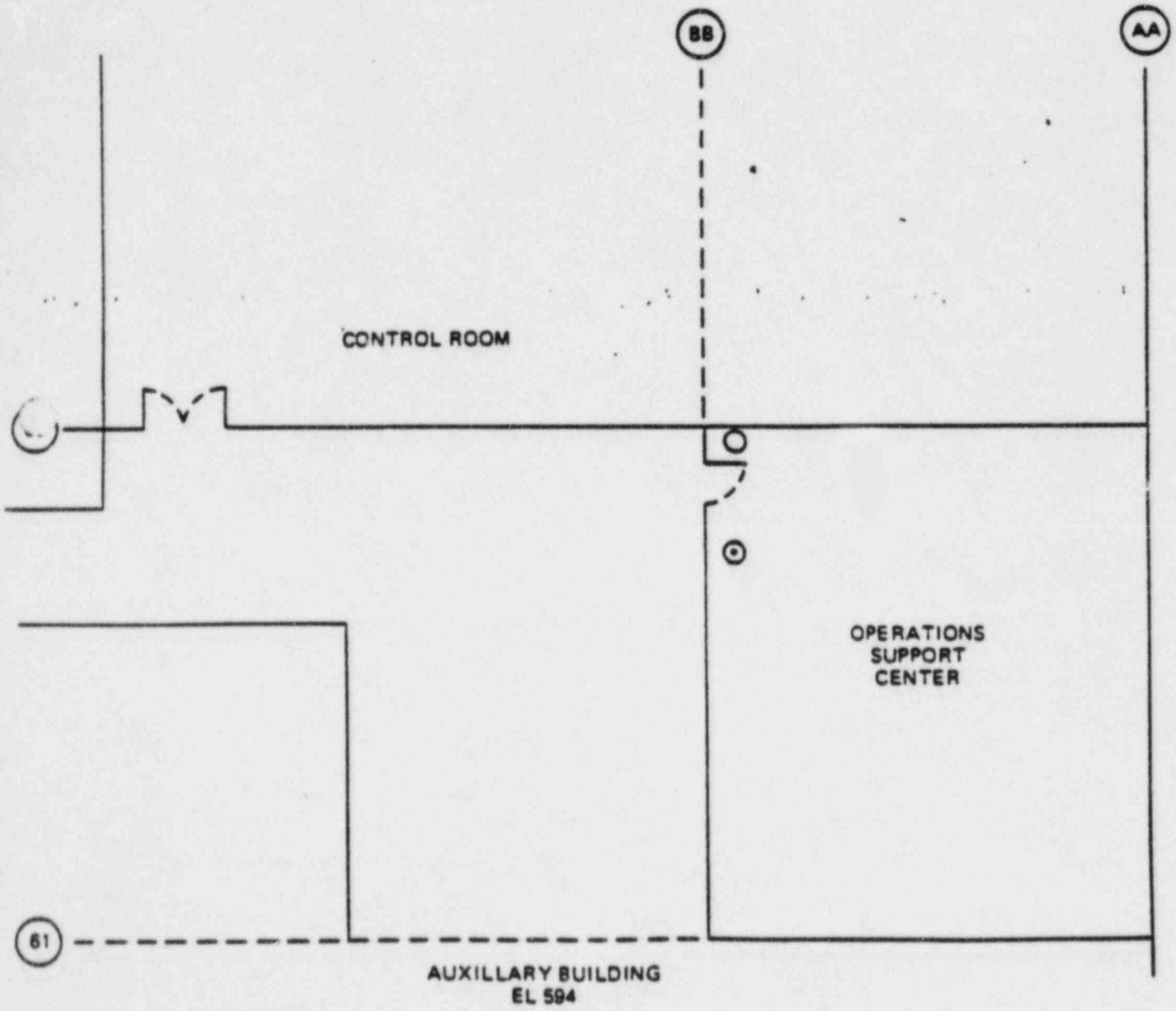
OPERATIONS SUPPORT CENTER

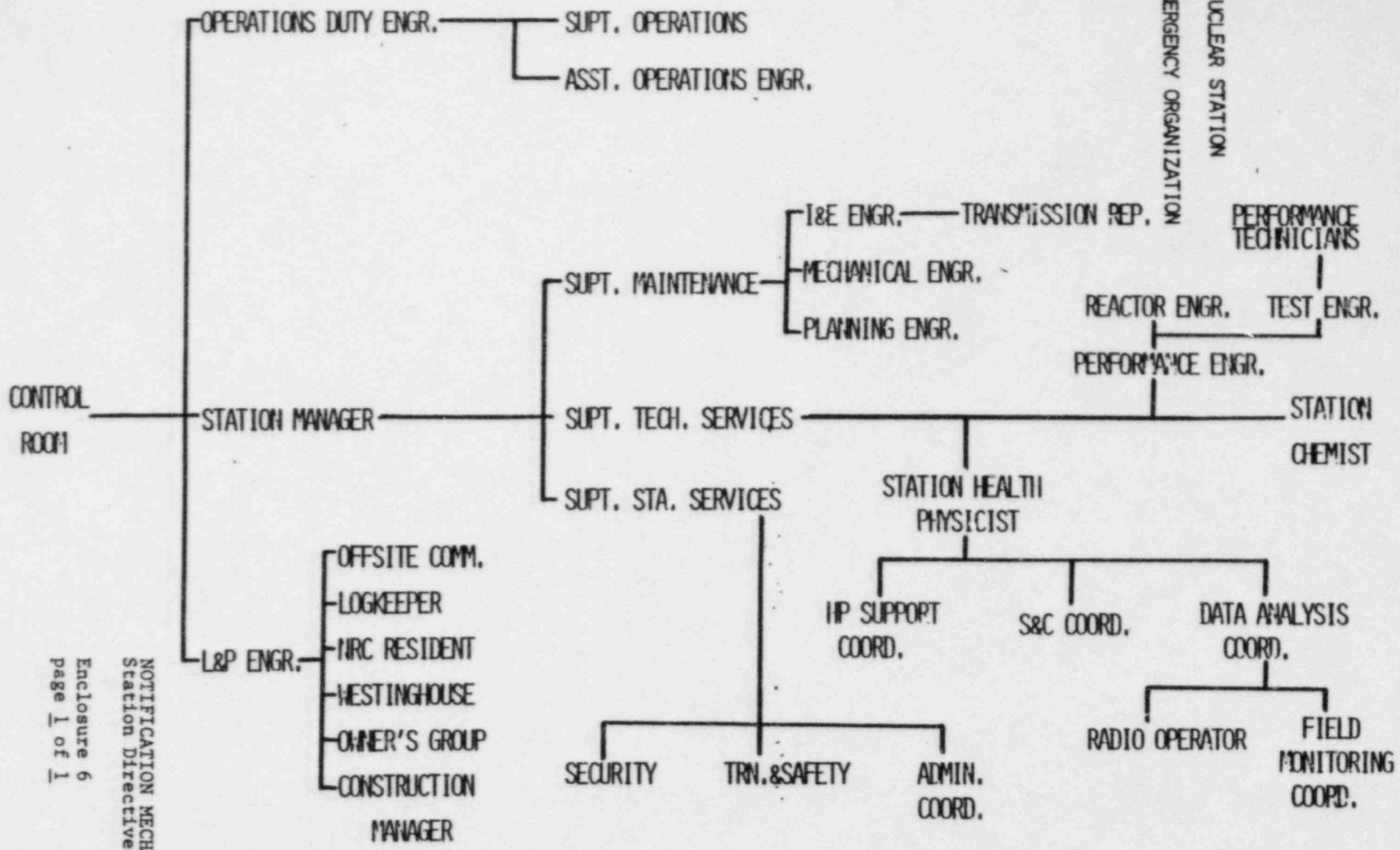




CATAWBA NUCLEAR STATION
TECHNICAL SUPPORT CENTER
C.N.S.D.3.8.4
Enclosure (4)

CATAWBA NUCLEAR STATION
OPERATIONS SUPPORT CENTER





NOTIFICATION MECHANISM
Station Directive 3.8.4 Rev.:

Enclosure 6
page 1 of 1

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: HP/0/B/1000/06
Change(s) 0 to
8 Incorporated

(2) STATION: Catawba Nuclear

(3) PROCEDURE TITLE: Emergency Equipment Functional Check and Inventory

(4) PREPARED BY: Edwin M. Bufield DATE: 8-6-84

(5) REVIEWED BY: Ruled T. Poole DATE: 8-6-84

Cross-Disciplinary Review By: _____ N/R: R. T. Poole

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: J. W. Hf Date: 8/6/84

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
EMERGENCY EQUIPMENT FUNCTIONAL CHECK AND INVENTORY

1.0 PURPOSE

To provide for the availability and readiness of Emergency Equipment.

2.0 REFERENCES

2.1 HP/0/B/1005/08; Respirator Quality Assurance

2.2 HP/0/B/1009/19; Emergency Radio System Operations, Maintenance and Communications

2.3 Catawba Nuclear Station Directive 2.11.13

2.4 Catawba Nuclear Station Directive 3.2.2

2.5 Catawba Nuclear Station Directive 3.3.3

2.6 Catawba Nuclear tation Emergency Plan

2.7 Catawba Nuclear Station Technical Specifications 6.8.1

2.8 Duke Power Company Radio Operator's Manual

2.9 Maintenance of Silver Zeolite Air Sampling Cartridges Letter; File: CN-768.01

2.10 10CFR 50 Appendix E

2.11 Technical Manual for Groban Gasoline Generators

3.0 LIMITS AND PRECAUTIONS

3.1 Operation of Portable Generators

3.1.1 Avoid operating the unit while hands are wet or while standing in water.

3.1.2 Generators shall not be started while equipment is plugged into generator.

3.2 Silver zeolite cartridges shall be discarded if the seal has been broken.

3.3 Any radiation monitoring equipment (located in an emergency kit) that must be removed from service for any reason shall be replaced within four hours from the time it is removed from the kit.

3.4 Any emergency kit used during training or for drill purposes shall be reinventoried as soon as possible. The individual responsible for the training or drill shall be responsible for inventory and restocking of all on-site kits.

3.4.1 Off-site kits shall be reinventoried as above and a list of deviations shall be given to the Respiratory/Instrument Calibration (R/IC) Supervisor. R/IC shall be responsible for restocking off-site kits as soon as possible.

4.0 PROCEDURE

4.1 Monthly Emergency Equipment Check/Inventory

4.1.1 Portable Generator Check

4.1.1.1 Portable generators shall be considered acceptable for use if:

4.1.1.1 The oil level is at an acceptable level per Reference 2.13.

4.1.1.2 The generator starts and runs for at least 5 minutes.

4.1.1.3 The generator stabilizes after a portable air sampler is plugged into each of the generator outlets.

4.1.1.2 If generator is acceptable, shut off generator and remove any excess gasoline from the gas tank.

4.1.1.3 Document the operability of the generators in the appropriate column on the Monthly/Quarterly Emergency Equipment Check Sheet (Enclosure 5.1).

4.1.2 Two-Way Low Band FM Radios

4.1.2.1 The radios shall be considered acceptable for use if:

4.1.2.1.1 Each radio transmits a message to another radio.

4.1.2.1.2 Each radio receives a message from another radio.

4.1.2.2 Document the operability of the radios in the appropriate area on Enclosure 5.1.

4.1.2.3 Inoperable radios shall be removed from service. Contact Toddville Communication Shop Planner for instructions on disposition for repair.

4.1.3 Batteries

4.1.3.1 All batteries shall be considered acceptable for use if:

4.1.3.1.1 The battery tester needle indicates "good" when the battery is tested.

4.1.3.1.2 The battery appears to be in good physical condition (no dents, corrosion, etc.).

4.1.3.2 Document battery check on Enclosure 5.1.

4.1.4 Portable Survey Instruments

4.1.4.1 Portable Survey Instruments shall be considered acceptable for use if:

4.1.4.1.1 The instrument battery checks.

4.1.4.1.2 The instrument source checks in accordance with the instrument's operation procedure (located in the emergency kit).

4.1.4.1.3 The instrument has no apparent physical damage.

4.1.4.1.4 The instrument's calibration date is current.

4.1.4.2 Document the instrument's operability on Enclosure 5.1.

4.1.5 Portable Air Samplers

4.1.5.1 Air Samplers shall be considered acceptable for use if:

4.1.5.1.1 The sampler operates when plugged into an electrical outlet.

4.1.5.1.2 The calibration date on the sampler is current.

4.1.5.1.3 The sampler has no apparent physical damage.

4.1.5.2 Document the sampler's operability on Enclosure 5.1.

4.1.6 Respiratory Equipment

4.1.6.1 Respiratory equipment shall be considered acceptable for use if:

4.1.6.1.1 The equipment is in accordance with criteria stated in Reference 2.1.

4.1.6.1.2 The Emergency Self-Contained Breathing Apparatus (SCBA) are available at the following locations:

Locations	Minimum Units
Control Room	2
Upper Personnel Hatch	2
Lower Personnel Hatch	2
Health Physics Respiratory Storage Area	8

4.1.6.1.3 Six large cylinders of breathing air (minimum of six hours used for 5 people) are located in the Control Room along with 5 airline respirators and associated airline hoses.

4.1.6.2 Document operability of respiratory equipment in accordance with Reference 2.1.

4.2 Quarterly Emergency Equipment Inventory/Inspection

4.2.1 Emergency equipment kits shall be inventoried quarterly and after each use using the appropriate Emergency Equipment Kit Checklist (Enclosures 5.4 - 5.13)

4.2.1.1 Consult the Emergency Equipment Kit Location Sheet (Enclosure 5.2) for the locations of each kit.

4.2.1.2 Perform monthly checks as in Steps 4.1.1, 4.1.3, 4.1.4, 4.1.5, 4.1.6.

4.2.1.3 The quarterly operability check on two-way low band radios shall be performed as follows:

4.2.1.3.1 Radios shall be checked from a point 10 miles from the plant in accordance with Reference 2.8.

4.2.1.3.2 Contact shall be made from the base station in the TSC to each of the radios.

4.2.1.3.3 Each of the radios shall make contact with the base station.

NOTE: Base Call Sign - KNHB-778

Radio Call Signs - KB36274
(Alpha, Bravo, Charlie, Delta, Echo, Foxtrot)

4.2.1.3.4 Document operability of radios on Enclosure 5.1.

4.2.1.4 Perform a functional check of the dosimeter charger/reader. The charger is acceptable for use if the charger light illuminates.

4.2.1.5 Ensure that the leak and source check dates on the dosimeters are current.

4.2.1.6 Ensure that the TLD's are the appropriate ones for the current quarter.

4.2.1.7 Ensure the Potassium Iodide tablets have not exceeded their expiration date.

4.2.1.8 Ensure the seal on the silver zeolite cartridge packet is not broken and the cartridges are not damaged.

4.2.1.9 Ensure that all procedures are current with the Control Copy.

4.2.1.10 Ensure the flashlight bulb illuminates properly.

4.2.1.11 Check all protective clothing for tears, rips or holes, cracks in rubber, missing snaps, broken zippers, etc.

4.2.1.12 If any deviations are found, they shall be noted in the deviation section of the applicable Emergency Equipment Kit Checklist (Enclosure 5.4 - 5.13).

4.2.1.12.1 Give a brief description of the deviation in this section.

4.2.1.13 Document any deviations on the Emergency Equipment Deviation Authorization Sheet (Enclosure 5.14).

4.2.1.14 The Technician shall sign off Enclosure 5.14 and the appropriate checklists (Enclosures 5.4 - 5.13) and forward to the Respiratory/Instrument Calibration (R/IC) Supervisor.

4.2.2 Weather Information Check

4.2.2.1 Quarterly a call shall be placed to the National Weather Service located in Columbia, SC at 803-794-2330 or 803-794-2593. If these numbers cannot be reached, an alternate number in Charlotte (704-399-6000) may be used. Obtain wind direction, wind speed, and cloud cover from one of these sources for the vicinity of Catawba Nuclear Station.

4.2.2.2 Obtain the same information from the Control Room.

4.2.2.3 Record this information on the Weather Information Form (Enclosure 5.2).

4.2.2.4 Compare the information from the Control Room and the Weather Bureau. If differences are found greater than 22° in wind direction and/or 50% in wind speed, the difference shall be documented on Enclosure 5.14.

4.3 Deviation Authorization

4.3.1 The Station Health Physicist shall be made aware of any deviation recorded on Enclosure 5.14.

4.3.2 The Station Health Physicist shall have evaluated the consequences the deviation may have upon the capability to respond to an emergency situation.

4.3.3 Enclosure 5.14 shall be used to state the action taken to remedy the deviation, and to state the justification for taking that action.

4.3.4 Sign off the PT printout and forward as per Reference 2.3.

4.4 Upon completion of this procedure all required documentation will be filed in the Emergency Equipment Functional Check and Inventory Log, until the end of the quarter.

4.4.1 At the end of the quarter all of the required documentation will be forwarded to the Station Health Physicist (HP) for review.

4.4.2 After review by the Station H.P., the documentation shall be forwarded to Master File.

5.0 ENCLOSURES

5.1 Sample of Monthly /Quarterly Emergency Equipment Check Sheet

5.2 Sample of Emergency Equipment Kit Location Sheet

5.3 Sample of Weather Information Form

5.4 Sample of Recovery Kit Checklist

5.5 Sample of Environmental Survey Kit Checklist

5.6 Sample of Environmental Survey Kit Checklist (Helicopter)

5.7 Sample of Personnel Survey Kit Checklist

5.8 Sample of Personnel Survey Kit Checklist (Evacuation Facility)

5.9 Sample of Emergency Medical Kit Checklist (First Aid Room)

5.10 Sample of Emergency Medical Kit Checklist (Piedmont Medical Center)

5.11 Sample of Operations Support Center Kit Checklist

5.12 Sample of Technical Support Center Kit Checklist

5.13 Sample of Fuel Transfer Kit Checklist

5.14 Sample of Emergency Equipment Deviation Authorization Sheet

CATAWBA NUCLEAR STATION
MONTHLY/QUARTERLY EMERGENCY EQUIPMENT CHECK SHEET
HP/0/B/1000/06
ENCLOSURE 5.1

	Monthly PIC-4A	E-140N	RM-14	E-320	Air Sampler	Batteries	Quarterly Chargers	Flashlight	Comments/Signature/Dat
Environmental Survey Kit - A									
Environmental Survey Kit - B									
Environmental Survey Kit - C									
Environmental Survey Kit - D									
Environmental Survey Kit - E									
Recovery Kit - Allen									
Recovery Kit - Transmission Line Maint.									
Recovery Kit - Security Pap Area									
Recovery Kit - Construction Personnel Area									
Personnel Survey Kit -Allen									
Personnel Survey Kit - Transmission Line Maint.									
ersonnel Survey Kit - Security Pap Area									
Personnel Survey Kit - Construction Personnel Area									
Emergency Medical Kit - First Aid Room									
Emergency Medical Kit - Piedmont Medical Center									
Operations Support Center Kit									
Technical Support Center Kit									
Fuel Transfer Kit									

MONTHLY/QUARTERLY EMERGENCY EQUIPMENT
CHECK SHEET
HP/0/B/1000/06
ENCLOSURE 5.1

GASOLINE GENERATORS

Generator Number	Comments	Signature/Date

PORTABLE RADIO TRANSMITTER - RECEIVERS

Radio Call Sign	Comments	Signature/Date

E

CATAWBA NUCLEAR STATION
EMERGENCY EQUIPMENT LOCATION SHEET
HP/0/B/1000/06
ENCLOSURE 5.2

KITS	LOCATION
Recovery Kits (4)	
Evacuation Facilities (2)	Allen Steam Station Transmission Line Maintenance Building
Security Pap Area	Temp. Admin. Building
Construction Personnel Access Area	Temp. Admin. Building
Environmental Survey Kits (Vehicle) (4)	Temp. Admin. Building
Environmental Survey Kit (Helicopter) (1)	Temp. Admin. Building
Personnel Survey Kits (4)	
Evacuation Facilities (2)	Allen Steam Station Transmission Line Maintenance Building
Security Pap Area	Temp. Admin. Building
Construction Personnel Access Area	Temp. Admin. Building
Emergency Medical Kit (2)	Aux. Building First Aid Room Piedmont Medical Center
Operations Support Center Kit	Operations Support Center
Technical Support Center Kit	Technical Support Center
Fuel Transfer Kit	Temp. Admin. Building

CATAWBA NUCLEAR STATION
WEATHER INFORMATION
HP/0/B/1000/06
ENCLOSURE 5.3

	National Weather Service	Control Room
Wind Direction	_____	_____
Wind Speed	_____	_____
Cloud Cover	_____	_____
Time	_____	_____

Comparison difference Wind Direction _____ degrees
Wind Speed _____ %

_____
Signature/Date

CATAWBA NUCLEAR STATION
RECOVERY KITS CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.4

ITEM		MINIMUM AMOUNT	DEV.*
List of Contents		1	
Eberline E-520 w/HP-270 Probe		1	
Exempt Source		1	
Low/High Range Dosimeters (0-500 mR), (0-5R)		2 each	
Dose Cards		25	
TLD Badges		6	
Dosimeter Charger		1	
Boundary Ribbon or Rope (50 yd. roll)		1	
Masking Tape (roll)		1	
Rain Suits (set)		2	
Protective Clothing (set)		2	
Poly Bags (Various)		12	
Caution Signs w/inserts		2	
Legal Pad		1	
Instrument/Smear Survey (pad)		1	
Pens		2	
Grease Pencil		1	
Full Face Respiratior With High Efficiency Filters		2	
First Aid Kit		1	
Potassium Iodide Tablets	Trans. Line Maint.	275 bottles	
	Security PAP	150 bottles	
	Temp. Admin. Bldg.	150 bottles	
	Allen Steam Station	275 bottles	
KI Distribution Data Sheet		100	
Smears (box)		1	
NuCon Smears		30	
Flashlight		1	
Batteries (Size D)		10	
Scissors		1	
Medication Envelopes	Trans. Line Maint.	100	
	Security PAP	60	
	Temp. Admin. Bldg.	60	
	Allen Steam Station	100	
HP/0/B/1003/12		1	
HP/0/B/1009/16		1	

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.14, if applicable, have been completed.

_____
Signature/Date

*Any Deviations will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
ENVIRONMENTAL SURVEY KITS CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.5

ITEM	MINIMUM AMOUNT	DEV.*
List of Contents	1	_____
Eberline E-520 w/HP-270 Probe	1	_____
Eberline E-140N w/HP-210 Probe (or equivalent)	1	_____
Exempt Source	1	_____
Portable MCA**	1	_____
Eberline PIC 6A	1	_____
Emergency Radio Transmitter/Receiver	1	_____
Radeco H809V Air Sampler	1	_____
Gasoline Generator (Gasoline in Safety Cabinet)	1	_____
Low/High Range Pocket Dosimeter (0-500 mR), (0-5R)	2 each	_____
Dose Cards	25	_____
TLD Badge	6	_____
Dosimeter Charger	1	_____
Full Face Respirator With High Efficiency Filter	2	_____
Potassium Iodide Tablets (bottle)	2	_____
Protective Clothing (Full Set)	3	_____
Poly Bags (Various Sizes)	6	_____
Masking Tape (roll)	1	_____
Limnological Sampler	1	_____
Cubitainers	6	_____
1 Liter Wide Mouth Bottles	5	_____
Stopwatch	1	_____
Flashlight	1	_____
Batteries (Size D)	14	_____
Batteries (9 volt)	4	_____
Silver Zeolite (CP-100G or GY-130) Filter Cartridges and Particulate Filters	30	_____
Filter Cartridges Labels & Bags	100	_____
Smears (box)	1	_____
NuCon Smears	30	_____
Instrument/Smear Survey (pad)	1	_____
Map of Ten Mile Zone Sectors	1	_____
Legal Pad	1	_____
Pen	2	_____
Permanent Marker	1	_____
Hand Spade	1	_____
Grease Pencil and refills	1	_____
Dime Roll	1	_____
Scissors	1	_____
Rain Suits	3	_____
Telephone location maps	1	_____
Field Monitoring Data Sheet	20	_____
Field Monitoring Work Sheet	20	_____
KI Tablet Distribution Data Sheet	1	_____
Radio Operator Manual	1	_____
CPD1 Key	1	_____
Cotton Liners (pairs)	5	_____
SLED Badges (Personal - Vehicle)	4	_____
HP/0/B/1009/04	1	_____

CATAWBA NUCLEAR STATION
ENVIRONMENTAL SURVEY KITS CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.5

ITEM	MINIMUM AMOUNT	DEV.*
HP/0/B/1009/16	1	_____
HP/0/B/1003/02	1	_____
HP/0/B/1003/05	1	_____
HP/0/B/1003/12	1	_____
HP/0/B/1003/17	1	_____
HP/0/B/1009/19	1	_____
HP/0/B/1003/31 or HP/0/B/1003/11	1	_____

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.14, if applicable, have been completed.

_____
Signature/Date

*Any Deviations will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

**This instrument is stored and maintained in the Health Physics Counting Room Area.

CATAWBA NUCLEAR STATION
ENVIRONMENTAL SURVEY KITS CHECKLIST (Helicopter)
HP/0/B/1000/06
ENCLOSURE 5.6

ITEM	MINIMUM AMOUNT	DEV.*
List of Contents	1	_____
Eberline PIC-6A	1	_____
Eberline E-520 w/HP-270 Probe	1	_____
Exempt Source	1	_____
Low/High Range Pocket Dosimeter (0-500 mR), (0-5R)	2 each	_____
Dose Cards	25	_____
Field Monitoring Data Sheet	20	_____
TLD Badge	6	_____
Dosimeter Charger	1	_____
Full Face Respirator with High Efficiency Filter	2	_____
Potassium Iodide Tablets (bottle)	2	_____
KI Distribution Data Sheet	1	_____
Stopwatch	1	_____
Flashlight	1	_____
Batteries (Size D)	10	_____
Batteries (9 volt)	4	_____
Ear Plugs (pairs)	6	_____
Map of Ten Mile Zone Sectors	1	_____
Legal Pad	1	_____
Pen	2	_____
Rain Suits	2	_____
Instrument/Smear Survey (pad)	1	_____
Emergency Radio Transmitter/Receiver	1	_____
HP/0/B/1003/05	1	_____
HP/0/B/1003/12	1	_____
HP/0/B/1009/19	1	_____
HP/0/B/1009/04	1	_____
HP/0/B/1009/16	1	_____

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.14, if applicable, have been completed.

_____
Signature/Date

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
PERSONNEL SURVEY KITS CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.7

ITEM	MINIMUM AMOUNT	DEV.*
List of Contents	1	
Eberline E-140N w/HP-210 Probe (or equivalent)***	2	
Sample Slide Tray***	1	
Exempt Source	1	
Emergency Radio Transmitter/Receiver**	1	
Radio Operator Manual	1	
Low/High Range Dosimeters (0-500 mR/hr), (0-5 R/hr)	2 each	
Dose Cards	25	
TLD Badges	2	
Dosimeter Charger	1	
Full Face Respirator With High Efficiency Filter	2	
Potassium Iodine Tablets (bottle)	2	
KI Distribution Data Sheet	1	
Protective Clothing (Full set)	6	
Boundary Ribbon or Rope (50 yd. roll)	1	
Caution Signs w/inserts	4	
Masking Tape (roll)	1	
Poly Bags (Various)	6	
Smears (box)	1	
NuCon Smears	25	
Instrument/Smear Survey (pad)	1	
Pens	2	
Grease Pencil & Refills	1	
Legal Pad	1	
Scissors	1	
Rain Suits	3	
Decon Kit	1	
1) Rad Con		
2) Rad Wash		
3) Paper Towels		
4) Scrub Brush		
5) Cotton Swabs		
6) Fingernail Clippers		
7) Phisohex (125 ml)		
Batteries (Size D)	10	
Station Directive 3.8.3	1	
HP/0/B/1003/31 or HP/0/B/1003/11	1	
HP/0/B/1004/06	1	
HP/0/B/1009/05	1	
HP/0/B/1009/16	1	
HP/0/B/1009/19**	1	

CATAWBA NUCLEAR STATION
PERSONNEL SURVEY KITS CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.7

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.14, if applicable, have been completed.

_____
Signature/Date

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

**Only the Construction Personnel access area shall have an Emergency Radio and procedure.

***The Security PAP Area shall have (3) E-140N w/HP-210 Probe or equivalent and Sample Slide Tray. The Construction Personnel Access Area shall have (2) E-140-N w/HP-210 Probe or equivalent and shall not have a Sample Slide Tray.

CATAWBA NUCLEAR STATION
PERSONNEL SURVEY KITS CHECKLIST
(EVACUATION FACILITY)
HP/0/B/1000/06
ENCLOSURE 5.8

ITEM	MINIMUM AMOUNT	DEV.*
List of Contents	1	
Eberline E-140N w/HP-210 Probe (or equivalent)	3	
Exempt Source	1	
Low/High Range Dosimeters (0-500 mR), (0-5R)	4 each	
Dose Cards	25	
TLD Badges	4	
Dosimeter Charger	1	
Potassium Iodide Tablets (bottle)	2	
KI Tablet Distribution Data Sheet	1	
Medication Envelopes	3	
Protective Clothing (Full Set)	6	
Boundary Ribbon or Rope (50 yd. roll)	1	
Caution Signs w/inserts	4	
Masking Tape (roll)	1	
Poly Bags (Various)	6	
Smears (box)	1	
Instrument/Smear Survey (pad)	1	
Pens	2	
Grease Pencil & Refills	1	
Legal Pad	1	
Decon Kit	1	
1) Rad Con		
2) Rad Wash		
3) Paper Towels		
4) Scrub Brush		
5) Cotton Swabs		
6) Fingernail Clippers		
7) Phisohex (125 ml)		
Scissors	1	
Disposable Coveralls	40	
Station Directive 3.8.3	1	
Evacuation Personnel Dose Record	50	
Catawba Nuclear Station Telephone Directory	1	
Batteries (Size D)	10	
HP/0/B/1003/31 or HP/0/B/1003/11	1	
HP/0/B/1004/06	1	
HP/0/B/1009/05	1	
HP/0/B/1009/16	1	

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.14, if applicable, have been completed.

Signature/Date

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
EMERGENCY MEDICAL KIT CHECKLIST
FIRST AID ROOM
HP/0/B/1000/06
ENCLOSURE 5.9

ITEM	MINIMUM AMOUNT	DEV.*
List of Contents	1	_____
Eberline E-140N w/HP-210 Probe (or equivalent)	1	_____
Exempt Source	1	_____
Poly Bags (various sizes)	6	_____
Smears (box)	1	_____
NuCon Smears	25	_____
Protective Clothing (Full Set)	4	_____
Rain Suits	2	_____
Tape, Radioactive Material	1	_____
Tape, Masking 2"	1	_____
Tape, Duct 2"	1	_____
Instrument/Smear Survey (pad)	1	_____
Pens	2	_____
Legal Pad	1	_____
Caution Signs w/inserts	3	_____
Radioactive Material Tags	50	_____
Scissors	1	_____
Poly for Ambulances (bundles)	3	_____
Protective Clothing for Ambulance Drivers (Sets)	2	_____
Batteries (Size D)	4	_____
HP/0/B/1003/31 or HP/0/B/1003/11	1	_____
HP/0/B/1004/06	1	_____
HP/0/B/1009/08	1	_____

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.14, if applicable, have been completed.

_____
Signature/Date

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
EMERGENCY MEDICAL KITS CHECKLIST
PIEDMONT MEDICAL CENTER
HP/0/B/1000/06
ENCLOSURE 5.10

ITEM	MINIMUM AMOUNT	DEV.*
List of Contents	1	
Eberline E-520 w/HP-270 Probe	1	____
Eberline E-140N W/210 Probe (or equivalent)	1	____
Exempt Source	1	____
Poly Bags (various sizes)	14	____
Smears (box)	1	____
NuCon Smears	25	____
Tape, Radioactive Material	1	____
Tape, Masking 2"	2	____
Tape, Duct 2"	2	____
Instrument/Smear Survey (pad)	1	____
Caution Signs w/inserts	5	____
Rad Rope	1	____
TLD Badges	10	____
Pocket Dosimeters (0-500mR)	10	____
Dose Cards	25	____
Dosimeter Charger	1	____
Radioactive Material Tags	50	____
Floor and Vent Covering	1	____
Disposable Coveralls	25	____
Disposable Shoe Covers (pairs)	25	____
Cubitaners	5	____
Decon Kit	1	____
1) Rad Con		
2) Rad Wash		
3) Paper Towels		
4) Scrub Brush		
5) Cotton Swabs		
6) Fingernail Clippers		
7) Phisohex (125 ml)		
Cotton Gloves (pairs)	50	
Rubber Gloves (pairs)	20	____
Batteries (Size D)	8	____
Grease pencils (box)	1	____
HP/0/B/1003/31 or HP/0/B/1003/11	1	____
HP/0/B/1003/12	1	____
HP/0/B/1004/06	1	____
HP/0/B/1009/08	1	____

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.14, if applicable, have been completed.

_____
Signature/Date

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
OPERATIONS SUPPORT CENTER KITS CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.11

ITEM	MINIMUM AMOUNT	DEV.*
List of Contents	1	
Protective Clothing (Set)	40	____
Full Face Respirators with High Efficiency Filters	10	____
Flashlights	11	____
Batteries (Size D)	34	____
Batteries (9 volt)	20	____
Eberline PIC 6A	5	____
RM-14 w/HP-210 Probe	1	____
E-140N w/HP-210 Probe (or equivalent)	1	____
Exempt Source	1	____
Camera (Polaroid)	1	____
Polaroid Film Pacs	2	____
Masking Tape (Roll)	2	____
Dosimeters (0-100R), (0-5R)	5	____
Dose Cards	25	____
Dosimeter Charger	1	____
Small Sample Bottles	10	____
Rain Suits	5	____
Poly Bags (various sizes)	50	____
Radeco H809V Air Sampler	3	____
Silver Zeolite (CP-100G or GY-130) Filter Cartridges and Particulate Filters	30	____
Filter Cartridge Labels	30	____
Potassium Iodide Tablets (bottle)	20	____
KI Distribution Data Sheet	10	____
HP/0/B/1003/02	1	____
HP/0/B/1003/05	1	____
HP/0/B/1003/31 or HP/0/B/1003/11	1	____
HP/0/B/1004/06	1	____
OSC Response Personnel Dose Record	25	____
Decon Kit	1	____
1) Rad Con		
2) Rad Wash		
3) Paper Towels		
4) Scrub Brush		
5) Cotton Swabs		
6) Fingernail Clippers		
7) Phisohex (125 ml)		
Instrument/Smear Survey (pad)	1	
Telephone	2	____
Post-Accident Containment Air Sampling Equipment Kit	1	____
Pen (box)	1	____
Grease Pencil (and refills) (box)	1	____
Extension Cord (50 ft.)	2	____
Extension Cords (25 ft.)	2	____
Stopwatch	2	____
Large Battery Lanterns	4	____
Status Boards (set)	1	____

CATAWBA NUCLEAR STATION
OPERATIONS SUPPORT CENTER KITS CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.11

ITEM	MINIMUM AMOUNT	DEV.*
OSC Response Personnel Dose Record Forms	100	_____
Smears (box)	1	_____

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.1.4, if applicable, have been completed.

_____
Signature/Date

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
TECHNICAL SUPPORT CENTER KIT CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.12

ITEM	MINIMUM AMOUNT	DEV.*
List of Contents	1	
Protective Clothing (Set)	20	____
Full Face Respirators with High Efficiency Filters	6	____
Eberline E-520 w/HP-270 Probe	1	____
Eberline PIC-6A	3	____
E-140N w/HP-210 Probe (or equivalent)	1	____
Exempt Source	1	____
Radeco H809V Air Sample	1	____
Dosimeter (0-100R), (0-5R)	6 each	____
Dose Cards	25	____
Silver Zeolite (CP-100G or GY-130) Filter Cartridges and Particulate Filters	30	____
Filter Cartridge Labels	25	____
Dosimeter Charger	1	____
Potassium Iodide Tablets (bottle)	25	____
Boundary Ribbon or Rope (50 yd. roll)	1	____
Caution Signs w/inserts	3	____
Rad Tape	2	____
Smears (box)	1	____
Poly Bags	6	____
Masking Tape (Roll)	1	____
Pen	2	____
Legal Pad	1	____
Grease Pencil (and refills)	1	____
Flashlights	8	____
Batteries (Size D)	30	____
Batteries (9V)	12	____
Small Sample Bottles	10	____
Rain Suits	6	____
Decon Kit	1	____
1) Rad Con		
2) Rad Wash		
3) Paper Towels		
4) Scrub Brush		
5) Cotton Swabs		
6) Fingernail Clippers		
7) Phisohex (125 ml)		
Instrument/Smear Survey (pad)	1	
Request for Exposure Extension Forms	15	____
Aux. Bldg. Drawings (set)	1	____
HP/0/B/1003/02	1	____
HP/0/B/1003/05	1	____
HP/0/B/1003/12	1	____
HP/0/B/1009/16	1	____
HP/0/B/1003/31 or HP/0/B/1003/11	1	____
HP/0/B/1004/06	1	____

CATAWBA NUCLEAR STATION
TECHNICAL SUPPORT CENTER KIT CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.12

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.14, if applicable, have been completed.

_____
Signature/Date

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
FUEL TRANSFER KIT CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.13

ITEM	MINIMUM AMOUNT	DEV.*
List of Contents	1	
Shoe Covers: disposable (pair)	20	
rubber (Pair)	6	
Gloves: disposable (bundle)	1	
surgeons (box)	1	
rubber (pair)	6	
Coveralls: disposable	4	
cloth	6	
Hoods	4	
Wet Suit	2	
Hard Hat	3	
Full Face Respirators with High Efficiency Filters	2	
Radeco H809V Air Sampler	1	
Eberline E-140N w/HP-210 Probe (or equivalent)	1	
Eberline PIC-6A	1	
Eberline E-520 w/HP-270 Probe	1	
Exempt Source	1	
Silver Zeolite Cartridges and Particulate Filters	10	
Labels for Filters and Cartridges	10	
Potassium Iodide Tablets (Bottle)	30	
TLD Badge	5	
Low/High Range Dosimeter (0-500 mR), (0-5.)	5 each	
Dose Card	25	
Dosimeter Charger	1	
Weather-Proof Caution Signs with Inserts	4	
Radioactive Waste Signs (4" x 6")	12	
Caution: Radiation/Radioactive Material Tags	12	
50 yd. Roll of Barricade Tape (Magenta & Yellow)	4	
Step Off Pads	3	
Poly Bags	12	
Hand Gardening Spade	1	
Wide Mouth Sample Bottles	4	
Plastic Sample Bottles	12	
Kimwipes (box)	2	
NuCon Smears	100	
Copy of NAC-1 Drawings (Prints)	1	
Copy of Loading and Unloading Instructions	1	
Duct Tape (Roll)	2	
Masking Tape (1" and 2" Rolls)	1each	
Contact Pyrometer with Probe	2	
Safety Glasses	5	
Binoculars	1	
Tool Kit	1	
Batteries (9 Volt)	4	
Flashlights	2	
Batteries (Size D)	18	
Steno Pad with 2 Mechanical Lead Pencils	1	
Pencil Refills	1	

CATAWBA NUCLEAR STATION
FUEL TRANSFER KIT CHECKLIST
HP/0/B/1000/06
ENCLOSURE 5.13

ITEM	MINIMUM AMOUNT	DEV.*
Grease Pencils	2	
All Purpose Marker	2	_____
Scotch Tape Roll and Dispenser	1	_____
Roll of Dimes	1	_____
Gasoline Generator (Gasoline Stored in Safety Cabinet)	1	_____
Instrument/Smear Survey (pad)	1	_____
HP/0/B/1003/02	1	_____
HP/0/B/1003/05	1	_____
HP/0/B/1003/12	1	_____
HP/0/B/1009/16	1	_____
HP/0/B/1003/31 or HP/0/B/1003/11		_____

This Kit has been inventoried and Steps 4.2.1.4 through 4.2.1.14, if applicable, have been completed.

_____
Signature/Date

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION

EMERGENCY EQUIPMENT DEVIATION AUTHORIZATION SHEET

DEVIATION DESCRIPTION	KIT	ACTION TAKEN TO REMEDY DEVIATION	ACTION JUSTIFICATION	SIGNATURE	DATE

R/IC Supervisor _____ Date _____

Station Health Physicist _____ Date _____