

VOLUME 14

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July 10, 1981
Revision 7

FARLEY NUCLEAR PLANT
EMERGENCY PLAN IMPLEMENTING PROCEDURE
FNP-0-EIP-4

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CHEMISTRY AND HEALTH PHYSICS
SUPPORT TO THE EMERGENCY PLAN

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W. S. Hamt
Plant Manager

Date Issued: 9-1-81

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CHEMISTRY AND HEALTH PHYSICS
SUPPORT TO THE EMERGENCY PLAN

1.0 Purpose

This procedure delineates the responsibilities of the Chemistry and Health Physics group during emergency conditions.

2.0 References

- 2.1 Joseph M. Farley Nuclear Plant Emergency Plan.
- 2.2 FNP-0-EIP-10, Evacuation and Personnel Accountability.
- 2.3 FNP-0-EIP-11, Handling of Injured Personnel.
- 2.4 FNP-0-EIP-13, Fire Emergencies.
- 2.5 FNP-0-EIP-14, Re-entry Procedures.
- 2.6 FNP-0-RCP-25, Chemistry and Health Physics Activities During a Radiological Accident (Short Term).

3.0 General

- 3.1 Chemistry and Health Physics support during emergencies shall consist of but is not limited to the following actions:
 - 3.1.1 Provide personnel for Radiation Monitoring Teams for monitoring in the plant, in the environment (onsite and offsite) and at the Southeast Alabama Medical Center (SAMC).
 - 3.1.2 If necessary, perform sampling, monitoring, chemical analysis and isotopic analysis activities delineated in RCP-25.
 - 3.1.3 Provide environmental monitoring data to the Emergency Director.
 - 3.1.4 Assist in planning re-entry and recovery activities to aid in minimizing personnel exposures.
- 3.2 All C & HP shift personnel will report to the Southeast corner of the Control Room if the plant emergency alarm is sounded.

- 3.3 All C & HP Group administrative personnel shall report to the Service Building auditorium in accordance with EIP-10 in the event of a general evacuation.

4.0 Procedure

- 4.1 The Health Physics Manager shall:
- 4.1.1 Ensure C & HP Group accountability per EIP-10.
 - 4.1.2 Dispatch personnel to provide radiological monitoring of personnel at other assembly areas.
 - 4.1.3 Implement RCP-25, if appropriate.
 - 4.1.4 Provide HP coverage when searching for missing personnel at the direction of the Emergency Director.
 - 4.1.5 Initiate recall of off-duty C & HP personnel as necessary.
 - 4.1.6 Provide the Emergency Director with information concerning plant status and environmental monitoring data and concerning any radiological incident.
 - 4.1.7 Assign available personnel to specific Radiation Monitoring Teams (RMT). Maintain communications with environmental RMT's via the radio located in the Control Alarm Station (CAS).
 - 4.1.8 Assist the Emergency Director by planning the activities of and giving instructions to members of the Radiation Monitoring Team(s).
 - 4.1.9 Assist the Emergency Director and other groups in planning re-entry and recovery activities to minimize personnel exposures.
 - 4.1.10 Evaluate the relocation of access control as necessary for re-entry.
 - 4.1.11 Provide supervision for personnel, area, and equipment decontamination during an accident to prevent/limit the spread of contamination.

Decontamination will be initiated if practicable:

- a. Inside the Radiation Controlled Area (RCA) when radioactive contamination for personnel and equipment reach 1000 and 5000 dpm/100cm³, respectively.
 - b. Outside the RCA when radioactive contamination for personnel and equipment reach 200 and 500 dpm/100cm³, respectively.
- 4.1.12 Provide for offsite analysis of radiological samples as appropriate.
 - 4.1.13 If conditions warrant, provide for sampling and analysis of site drinking water for radioactive contamination.
 - 4.1.14 If a person is to be exposed to airborne radioactive iodine such that he would exceed 2,000 MPC-hrs, consider issuing potassium iodide as a thyroid blocking agent. Instructions and considerations for use are listed in Figure 3.
 - 4.1.15 Determine the severity of core damage based on the gamma dose rate inside containment per Appendix 1.
- 4.2 A Radiation Monitoring Team assigned to monitor in the plant or at assembly areas shall:
 - 4.2.1 Comply with EIP-10 in providing support during evacuations.
 - 4.2.2 Comply with EIP-11 in providing support to injured personnel.
 - 4.2.3 Comply with EIP-13 if supporting the fire brigade.
 - 4.2.4 Comply with EIP-14 if a member of a re-entry team.
 - 4.2.5 Don necessary protective clothing and emergency equipment and perform radiological surveys as directed.
 - 4.2.6 Document all survey data.

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- 4.2.7 Post and establish controlled access areas as appropriate.
- 4.2.8 Report findings to the Technical Support Center (TSC).
- 4.3 A Radiation Monitoring Team assigned to monitor in the environment (onsite and offsite) shall:
 - 4.3.1 Obtain the RMT kit from the CSC building. Check operability of all equipment. Don necessary protective clothing and emergency equipment.
 - 4.3.2 Pick up a transceiver, if necessary, located in the Primary Access Point (PAP) Building and proceed to the Environmental Vehicle or other available plant vehicle.
 - 4.3.3 Perform a direct radiation, air particulate, and radioiodine surveys in areas designated by the Emergency Director or Health Physics Manager. Refer to Figures 1 & 2 for predesignated monitoring points.
 - 4.3.4 Replace any TLD located in the area and post additional TLD's as directed.
 - 4.3.5 Document survey data.
 - 4.3.6 Relay data to the TSC via radio. Report locations per the instructions on Figure 2.
- 4.4 A Radiation Monitoring Team assigned to monitor at the Southeast Alabama Medical Center shall:
 - 4.4.1 Maintain a log of all personnel who enter the Radiation Casualty Receiving Area or who are in the vicinity of the casualty.
 - 4.4.2 Ensure that the ventilation system registers in the Radiation Casualty/Decontaminat Area are closed if high levels of contamination are involved.
 - 4.4.3 Keep the doctor informed of radiation and contamination levels.

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- 4.4.4 Monitor the patient when directed by the doctor.
- 4.4.5 Ensure all body excreta and excised tissue from patient are placed in appropriately labeled and sealed containers.
- 4.4.6 Provide decontamination information to doctor as requested.
- 4.4.7 If patient must be transferred to surgery or elsewhere in the hospital, advise doctor as to the radiological precautions necessary during and after transfer.
- 4.4.8 After the patient has left the Radiation Casualty/Decontamination Area, survey personnel, equipment and the Radiation Casualty/Decontamination Area. Direct decontamination efforts to return the area to normal use.
- 4.4.9 Survey ambulance personnel, ambulance, equipment, receiving area and path of the casualty and direct decontamination efforts, if necessary.
- 4.4.10 Collect and prepare all bioassay samples, smears and waste containers for transportation to the plant. Post and label containers and area as appropriate.
- 4.4.11 Sample the run-off in the holdup tank for analysis at the plant. Based on the analysis the C & HP Supervisor shall inform SAMC to hold the contents for drumming or to release the contents to the sanitary sewer system.
- 4.4.12 Obtain personnel monitoring devices and appropriate information from hospital personnel.
- 4.4.13 Document all survey data and record all actions in the logbook.
- 4.4.14 Maintain communications with Emergency Director or Health Physics Manager.

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RADIATION MONITORING TEAM CHECKLIST: ENVIRONMENTAL

The senior Chemistry & Health Physics Technician on the team shall be responsible for completing the checklist and returning it to the Health Physics Manager. Refer to Figure 1 for predesigned monitoring points.

The Environmental Radiation Monitoring Team (onsite and offsite) shall:

- | | <u>Initials</u> |
|---|-----------------|
| A. Obtain RMT kit from CSC. Don necessary protective clothing and emergency equipment | _____ |
| B. Pick up monitoring equipment (i.e. G.M. Instrument, Exposure Rate Instrument, and Air Sampler) necessary for environmental survey. Check operability of equipment. | _____ |
| C. Verify operation of vehicle two-way radio prior to exit from site. | _____ |
| D. If the two-way radio is non-operational or if the vehicle is not equipped with a radio, pick up a transceiver from PAP. Check operability. | _____ |
| E. Perform surveys and document survey data in log book. Report locations per instructions on Figure 2. | _____ |
| F. Label all samples with sample time, flow rates, location, date, etc. | _____ |
| G. Relay pertinent data to TSC. | _____ |
| H. Maintain two-way radio in the <u>ON</u> position and report data to TSC. | _____ |
| I. If requested to replace filters at environmental air sampling station, record totalizer reading and insure flow rate is 1½ cubic feet/minute. | _____ |
| K. If replacing environmental TLD's, record TLD serial number, sector, date and time TLD placed or removed. | _____ |

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RADIATION MONITORING TEAM CHECKLIST: HOSPITAL

The senior Chemistry & Health Physics Technician on the team shall be responsible for completing the checklist and returning it to the Health Physics Manager.

The Radiation Monitoring Team at the Hospital shall:

- | | <u>Initials</u> |
|---|-----------------|
| A. Detain ambulance personnel and vehicles until surveying is completed. | _____ |
| B. Close the ventilation system in the Radiation Casualty/Decontamination area, if high levels of contamination create the potential for airborne activity. | _____ |
| C. Insure that drain systems are aligned to a holding tank and isolated from the Dothan Sewer System. | _____ |
| D. Maintain a log of personnel who enter the affected area. | _____ |
| E. Ensure that Personnel Monitoring Dosimeters (PMD's) are distributed as necessary. (Insure dosimeters are zeroed or record issue readings.) | _____ |
| F. Insure excreta and/or excised tissue are placed in appropriately labeled and sealed containers. | _____ |
| G. Provide the doctor with monitoring and decontamination data. Monitor patient when directed by doctor. | _____ |
| H. Survey all personnel, equipment and affected areas prior to release. | _____ |
| I. Direct all decontamination efforts. | _____ |
| J. Collect all PMD's, log readings from dosimeters and insure the names are on TLD's. | _____ |
| K. Sample holding tank for analysis at plant. | _____ |
| L. Maintain communication with Emergency Director or Health Physics Manager. | _____ |

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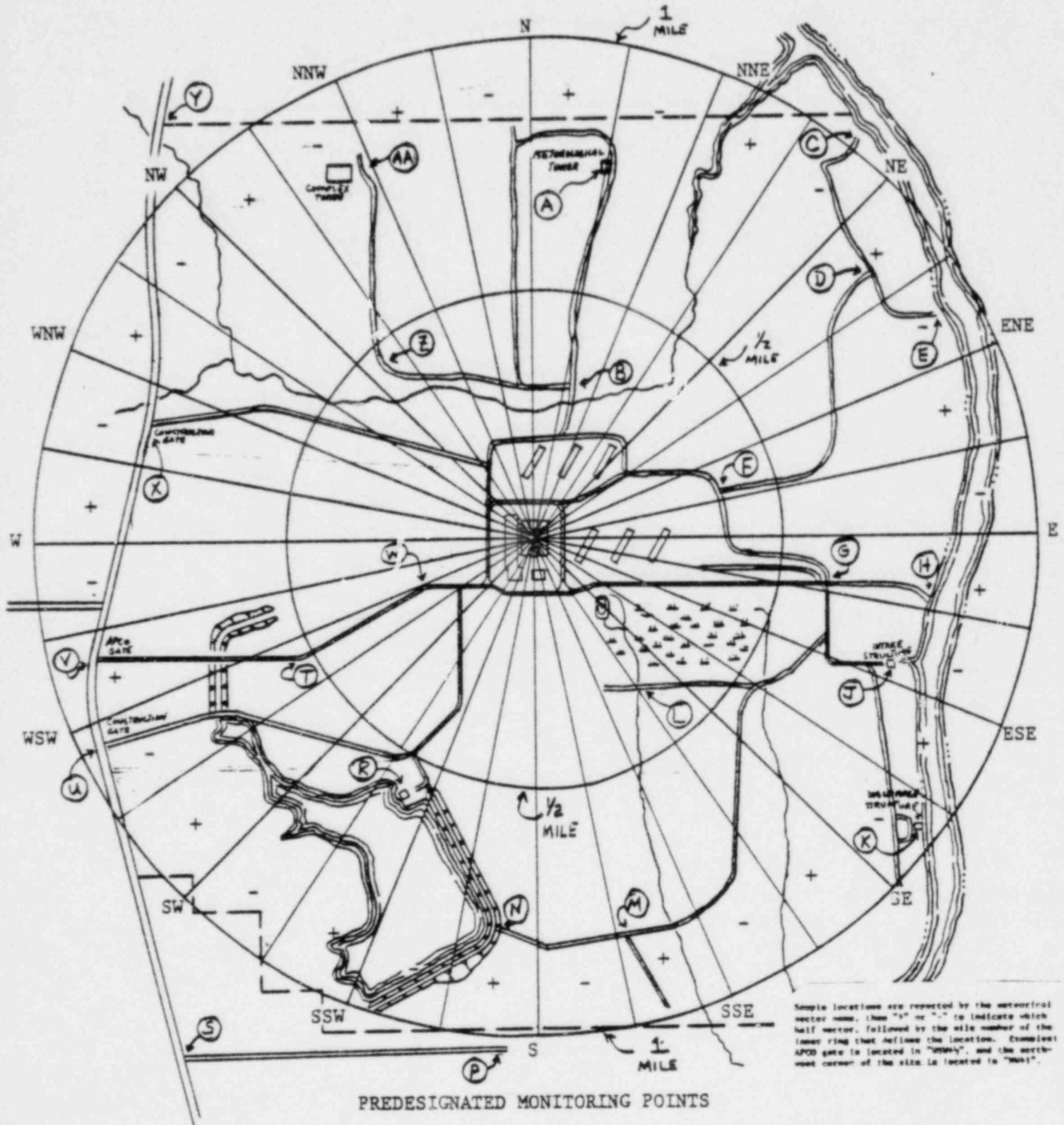
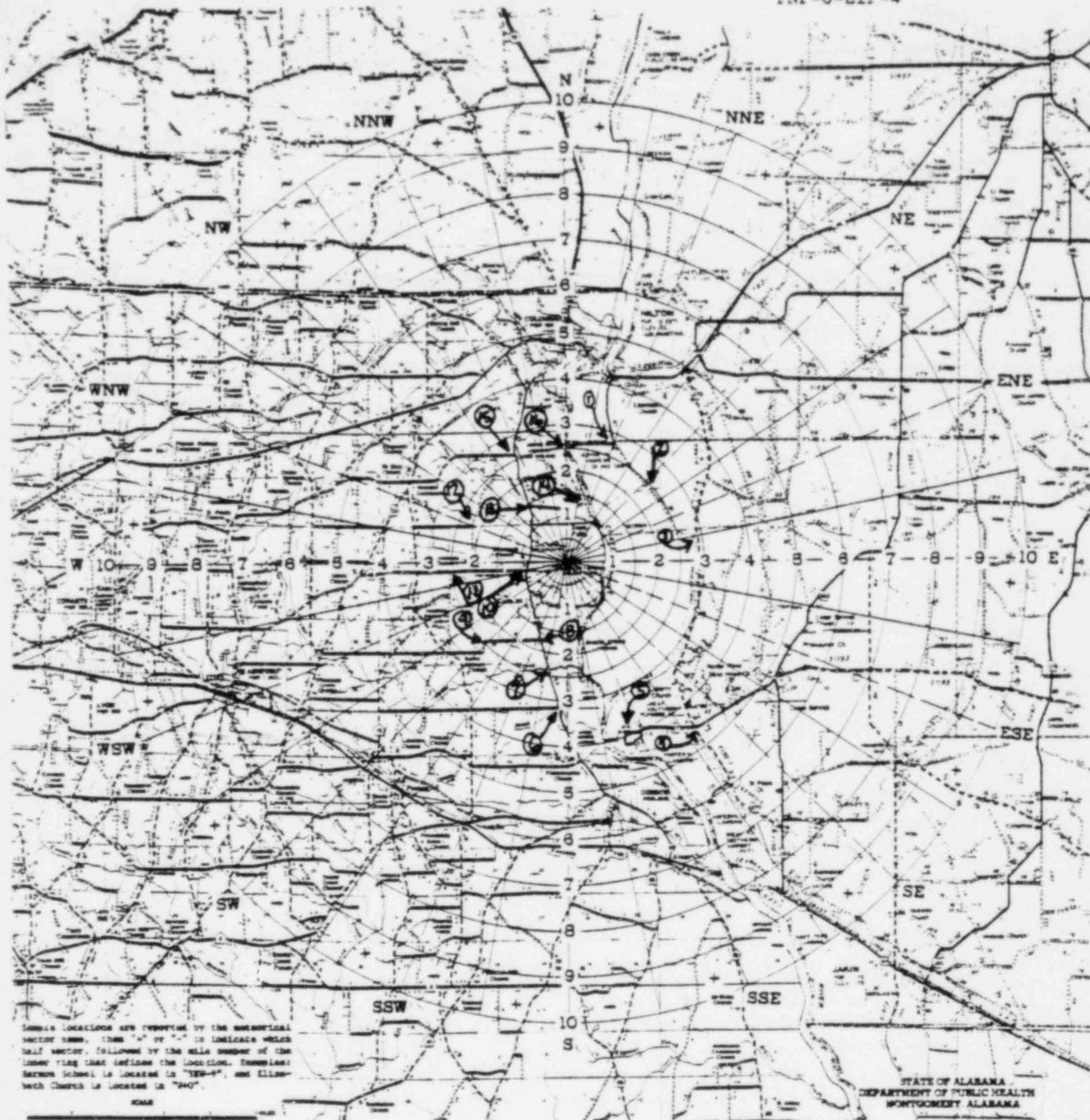


Figure 1



PREDESIGNATED MONITORING POINTS

Point No.	Location	Description	Point No.	Location	Description
1	NNE-14	Road Intersection	9	SW-14	Bend of road
2	NE-2	Bridge	10	WSW-1	APCO gate at AL95
3	E-24	Road Intersection at GA370	11	W-14	Road Intersection
4	SE-4	Intersection of GA271 & GA370	12	WSW-2	Road Intersection
5	SSE-4	Great Southern	13	NNW-1	Road Intersection at AL95
6	S-3	Smith Branch at AL95	14	NNE-1	Bend in road
7	S-2	Cedar Creek at AL95	15	NNW-14	Road Intersection at AL95
8	SSW-14	Road Intersection at AL95	16	W-14	Andrews Dam

Figure 2

Patient Package Insert For

THYRO-BLOCK™

(POTASSIUM IODIDE)

(pronounced poe-TASS-ee-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

CW-107915-10-79

Issue 10-79

APPENDIX 1

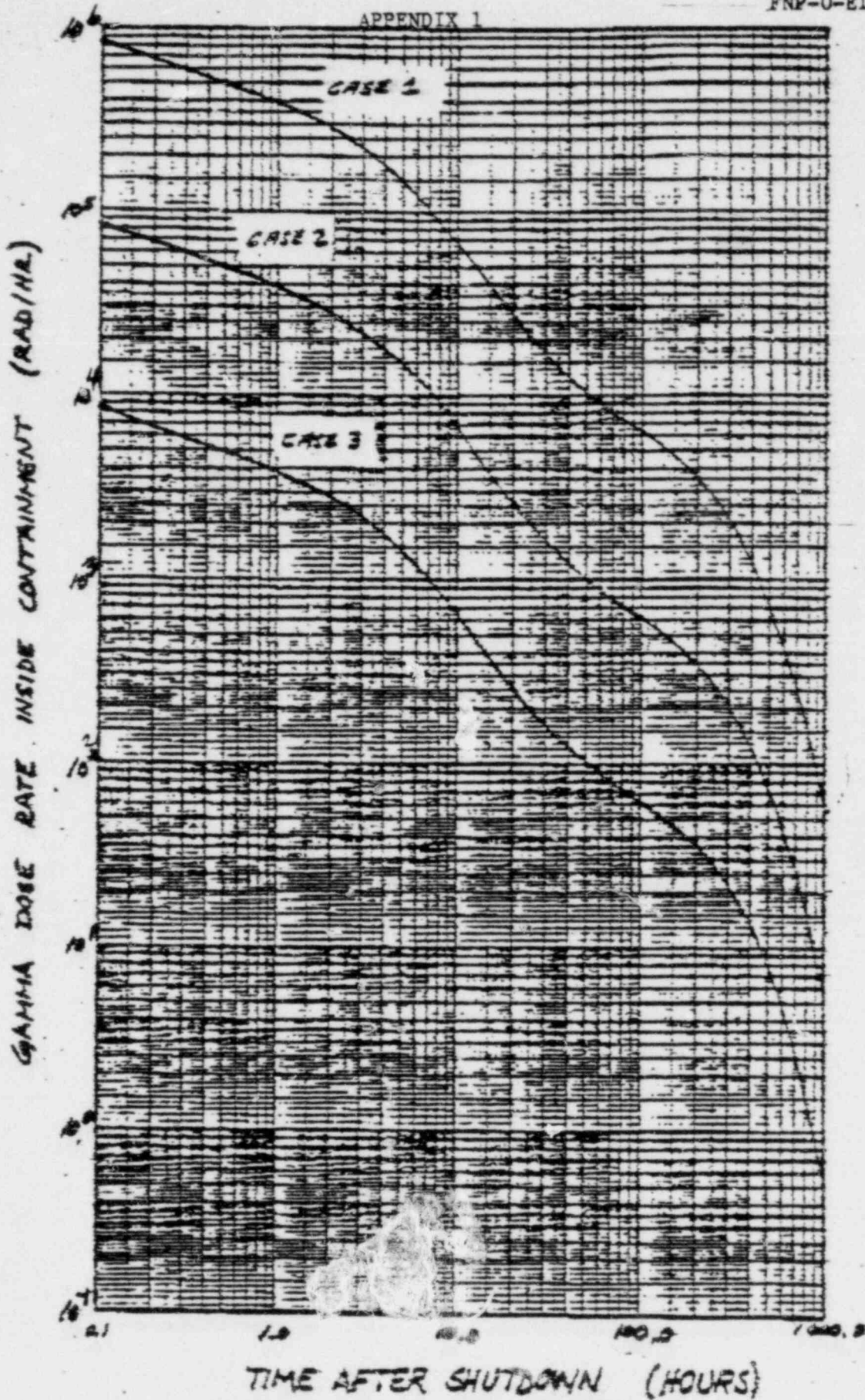
The graph on Sheet 2 of this Appendix shows the gamma dose rates inside containment as a function of time after the following:

- Case 1: 100% Core Melt (100% of noble gas and 25% of iodine core inventory is released into the containment and is available for leakage to the environment.)
- Case 2: 10% Core Melt (approximates total cladding failure with 10% of noble gas and 2.5% of iodine core inventory released.)
- Case 3: 1.0% Core Melt or 10% Cladding Failure (1.0% of noble gases and 0.25% of iodine core inventory released.)

Note that these plots are for volumes above the operating deck XL 155'-0". All assumptions made to plot the graph are the same as those given in the FSAR for LOCA analysis.

(One of these assumptions is one train of containment spray and one train of containment coolers is operating. Two trains of containment spray were considered in a separate analysis. Assuming both trains are operating would effectively double the removal rate of the elemental and particulate forms of iodine. However, due to the limit of spray removal credit allowed by the NRC (DF=100), the sprays would be "cut-off" in half the time. This effect would be seen in the first 30 minutes after shutdown, but is negligible in the graph due to the presence of noble gases. Thus, justification of using the FSAR LOCA analysis as guidelines for this analysis.)

APPENDIX 1



Gamma Dose Rate in Containment versus Time After Shutdown