



Carolina Power & Light Company

APR 05 1982



Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D.C. 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324
LICENSE NOS. DPR-71 AND DPR-62
EMERGENCY PLANNING

Dear Mr. Denton:

In accordance with 10CFR50.54(s)(1), Carolina Power & Light Company (CP&L) hereby transmits ten (10) copies of the North Carolina Emergency Response Plan in support of our Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (BSEP). The attached plan supersedes the draft plan previously submitted to NRC in our letter of February 17, 1981. The dates denoting revisions are noted at the bottom of the affected pages.

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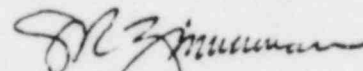
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411 Fayetteville Street • P. O. Box 1281 • Raleigh, N. C. 27602

We are prepared to work closely with the NRC staff in order to respond to any questions that may arise.

Yours very truly,



S. R. Zimmerman
Manager
Licensing & Permits

JAM/MSG/lr (nrc4)
Attachment

cc: Mr. J. P. O'Reilly (NRC-RII) (3 attachments)
Mr. J. Van Vliet (NRC) (1 attachment)

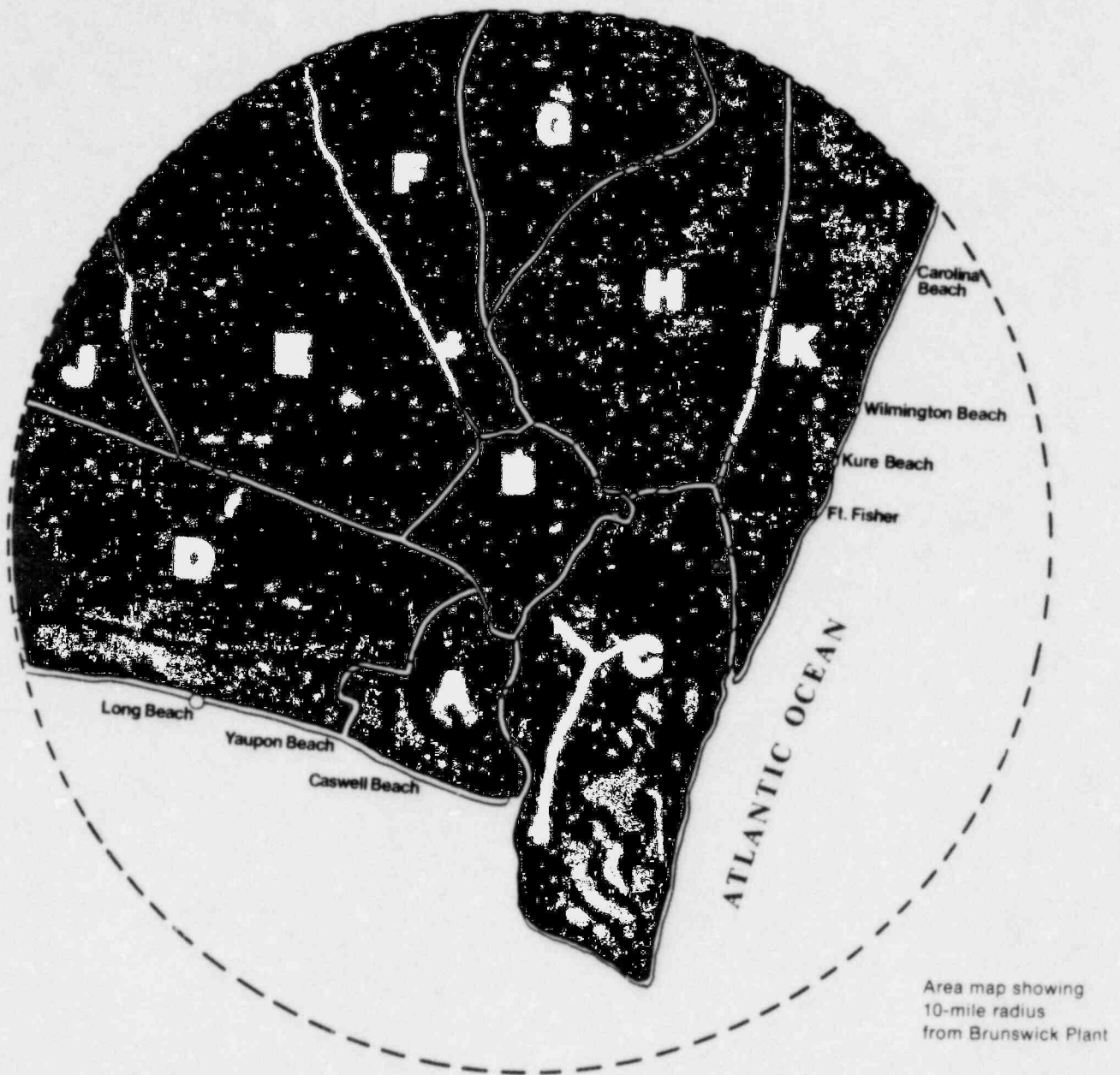
Carolina Power & Light
P. O. Box 458
Southport, N. C. 28461

Emergency Evacuation Plan

For the Brunswick Nuclear Power Plant
Carolina Power & Light Company

This plan is to be used in the event of an emergency evacuation of the Brunswick Nuclear Power Plant. It is intended to provide a clear and concise outline of the emergency evacuation plan.

BULK RATE
U. S. POSTAGE
PAID
PERMIT NO. 49
ZEBULON, N. C.



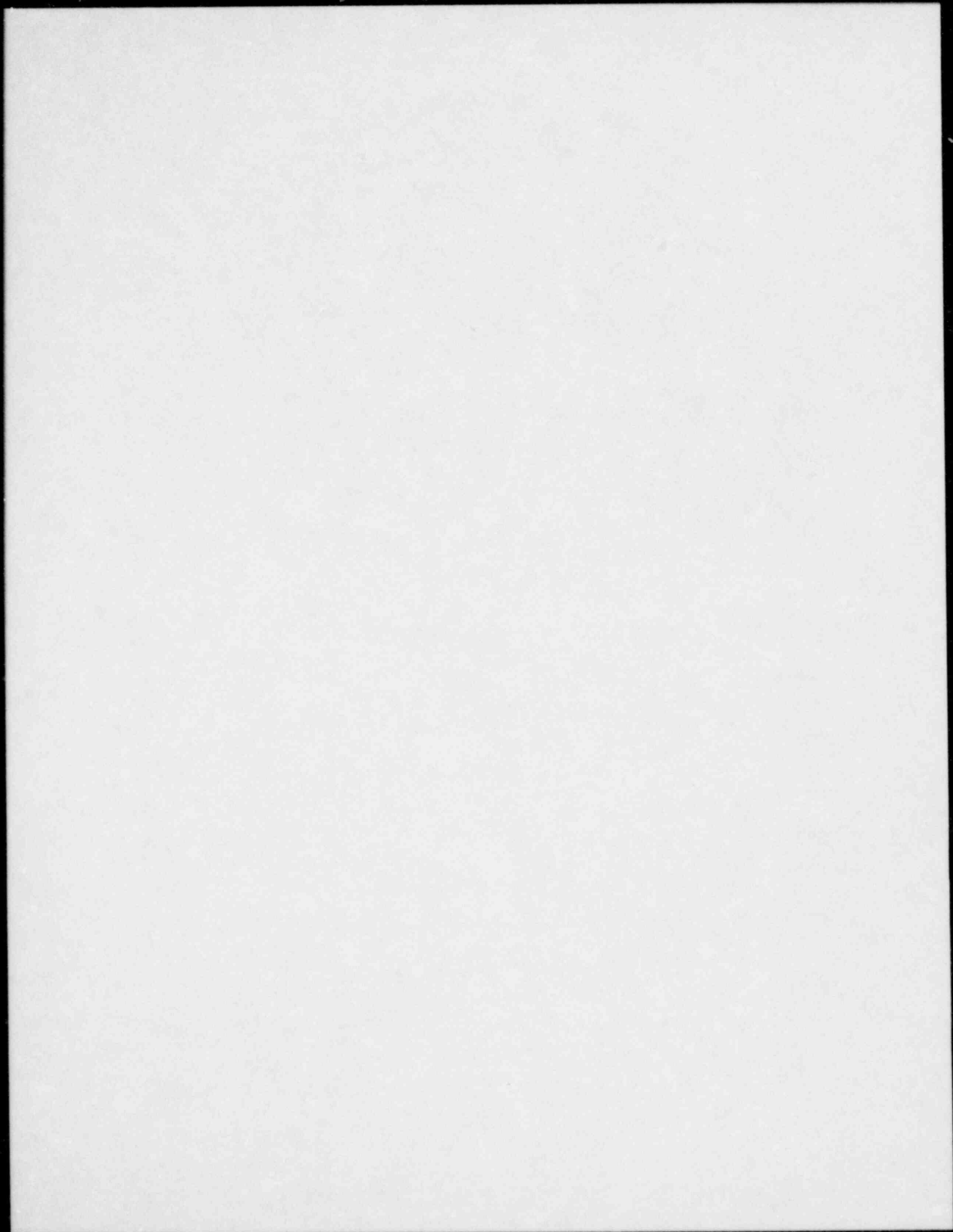
Please keep this map in your phone book or other location in your home where it could be found easily in the event of an emergency.

Evacuation Routes

Zone	Evacuation Route	Shelter
A	—NC 87 north, US 17 north, SR 1438 (Lanvale) north, right on SR 1437	Leland Middle School
B	—NC 87 north, US 17 north, SR 1438 (Lanvale) north, right on SR 1437	North Brunswick High School Leland Middle School
C	—NC 133 north, SR 1472 (old US 74/76) west, SR 1455 north	Lincoln Primary School
D	—NC 211 west, US 17 south, NC 130 north	West Brunswick High School

E	—NC 87 north, US 17 north, SR 1438 (Lanvale) north, right on SR 1437 —SR 1500 north, US 17 north, SR 1438 (Lanvale) north, right on SR 1437	North Brunswick High School
F	—NC 87 north, US 17 north, SR 1438 (Lanvale) north, right on SR 1437	North Brunswick High School
G	—NC 133 north, SR 1437	North Brunswick High School
H	—NC 133 north, SR 1472 (old US 74/76) west, SR 1455 north	Lincoln Primary School
J	—SR 1505 north, SR 1501 east, SR 1500 north, US 17 north, SR 1438 (Lanvale) north, right on SR 1437	Leland Middle School

*These shelters are available only on days when school is not in session.



K —Dow Road, US 421 north,
NC 132 north

Trask Coliseum, UNC-W;
N.C. National Guard
Armory; *Roland Grise Jr.
High School; *Hoggard
High School; *Alderman
Elementary School

The Brunswick nuclear power plant near Southport has been producing electricity for Carolina Power & Light customers since November 1975, when the first unit began commercial service. A second unit was brought on line in March 1977.

The units, like all commercial nuclear plants, are operated under strict safety and radiation protection standards set and monitored by the Nuclear Regulatory Commission (NRC). The NRC is the federal governmental agency responsible for regulating nuclear power plants to assure safety.

It is unlikely that a serious emergency will happen at the Brunswick plant. Many safety features were built into the plant, and CP&L and government agencies continuously monitor its operation.

Yet no energy source is completely risk free. Thus, CP&L and state and local emergency officials have developed extensive emergency plans to ensure that residents living near the plant would be protected in the unlikely event a major emergency did occur.

Any serious emergency that might endanger people living near the plant would be expected to develop over a period of time. There would be adequate warning time to take necessary action for your safety.

In the event of such an emergency, your knowledge of the emergency plan will help assure the safety of you and your family. It is important that you read and understand this information.

If an emergency occurs ...

CP&L will immediately notify designated emergency officials in Brunswick and New Hanover counties as well as state and federal officials.

If there is any potential danger to you and your family ...

State and local emergency officials will help spread the word by such methods as sound trucks, sirens, bullhorns and knocking on doors. Aircraft and patrol boats will be used to notify people along the coast.

Once you are aware that an emergency has occurred, turn on your radio or television for information and instructions. The 24-hour Emergency Broadcast System transmission stations in Wilmington are: WHSL (97.3 FM), WWIL (1490 AM), WGNi (1340 AM) and WAAV (102.7 FM).

Most local radio and television stations in the area will carry the emergency broadcasts.

You may be advised to ...

(1) Take cover or go indoors

Radioactive material that could be released from a nuclear power plant would be in the form of dust or gas. You could come in contact with this material by breathing contaminated air, drinking contaminated water or eating contaminated food.

Therefore, should radioactive material be released, residents in the area downwind from the release may have to take shelter until the cloud passes to minimize the possibility of contact with radioactivity.

If a release occurs, you may be advised to:

1. Remain indoors. Close all windows and doors. Turn off fans, air conditioner and forced-air furnace.
2. If you have just come indoors, take a shower and wash the clothes you were wearing.
3. Cover or put in the refrigerator any foods not in covered containers.
4. Do not use the telephone. Emergency officials will need all telephone lines open for emergency communication.
5. Stay tuned to local radio and television stations to await further instructions.

(2) Evacuate the area

In the event that larger amounts of radioactive material escape over a prolonged period of time, it may be necessary for people to move out of those areas that could be affected by a release.

It is unlikely that everyone in the 10-mile radius of the plant would have to evacuate.

The movement of radioactive material would depend on the accident severity and weather conditions such as wind speed and direction. Therefore, the evacuation map has been divided into zones to make it easier to evacuate only those areas downwind of the release.

If it is necessary to evacuate, you will be advised to:

1. Stay tuned to local radio and television stations for notice of evacuation and any special informa-

tion or instructions you may need.

2. Take the following items with you:

- Two blankets or a sleeping bag per person
- Two changes of clothes
- Toilet articles
- Essential medication
- Important personal papers you might need

3. Upon leaving your home, make sure appliances and faucets are turned off, and doors and windows are locked. Pets should be sheltered and provided with adequate food and water.

During your absence from home or business, law enforcement officials will patrol the area to prevent property damage or loss. Unauthorized persons will not be permitted in the evacuated area.

4. Use personal transportation, if possible, and move to motels or stay with relatives and friends located outside the 10-mile radius of the Brunswick plant.

Transportation and shelter will be provided for those who need it. Assembly areas have been designated in each community for those needing transportation, and emergency officials will be on duty to guide you to them. Public shelters will be set up in schools outside the 10-mile evacuation area.

5. Do not use the telephone unless you need transportation. Officials will need all telephone lines open for emergency communication.

Persons with handicaps or others with special transportation needs should call the county emergency management or law enforcement office.

Brunswick County 253-4376 or 253-4321
New Hanover County 762-5228.

Radiation levels will be monitored by federal, state and local authorities as well as by CP&L. State officials will determine when it is safe to return home briefly to check on pets and to pick up other items. When it is safe to return to your home, you will be notified promptly through the news media or by public officials.

What is radiation?

Radiation is energy traveling in the form of waves or particles. **Natural background radiation** is constantly with us — in the air we breathe, in the food we eat, in the homes we live in and even in our bodies.

Units of radiation dose are expressed in millirems (mrem). One millirem is equal to watching one hour of black-and-white television per day for a year or moving to an elevation 100 feet higher.

In a year, the average person will be exposed to the following natural background radiation from:

Solar radiation	35 mrem
Building materials	34 mrem
Food	25 mrem
Ground	11 mrem
Air	5 mrem

X-rays and other forms of **man-made radiation** have been an important part of medical science. Today over 90 percent of the public's exposure to man-made radiation is from diagnostic x-rays. Less than 1 percent is due to the nuclear power industry.

There are three types of radiation:

- **Alpha** particles travel several inches in air and can be stopped by a sheet of paper.
- **Beta** particles travel a few feet in the air and can be stopped by an inch of wood or a thin sheet of metal.
- **Gamma** rays travel a greater distance and must be stopped by dense materials such as lead or concrete.

Radiation from the operation of a nuclear plant, from a health-effects standpoint, is no different than natural background radiation.

Under Nuclear Regulatory Commission standards, a nuclear plant can release tiny quantities of radioactive material into the air and water under controlled conditions. These planned releases are normal and harmless and are monitored by the plant and by federal and state agencies.

In the event of a serious emergency, larger amounts of radioactive material could be released into the air and water, resulting in some risk to the health of persons living near the plant.

Can radiation be harmful?

The potential harm to you from radiation depends on:

- The type and amount of the particles or rays to which you are exposed,
- The length of time you are exposed,
- The amount of your body exposed, and
- The amount of radioactive material you breathe or ingest into your body.

A person can be exposed to radiation in two ways:

- By contact with a radioactive source outside the body, and
- By taking radioactive material into the body by eating, drinking or breathing it.

Unlike the external source, which you can simply walk away from, radioactive material taken into the body will continue to irradiate it even after you leave the area of initial contact.

How the Brunswick plant works

Steam Cycle

The splitting of atoms of uranium in the nuclear reactor produces heat. Water circulating through the reactor vessel is heated to produce steam that drives the turbine generator to make electricity.

From the turbine, the used steam goes into a condenser where it is cooled, converted to water and pumped back into the reactor vessel where the process begins again.

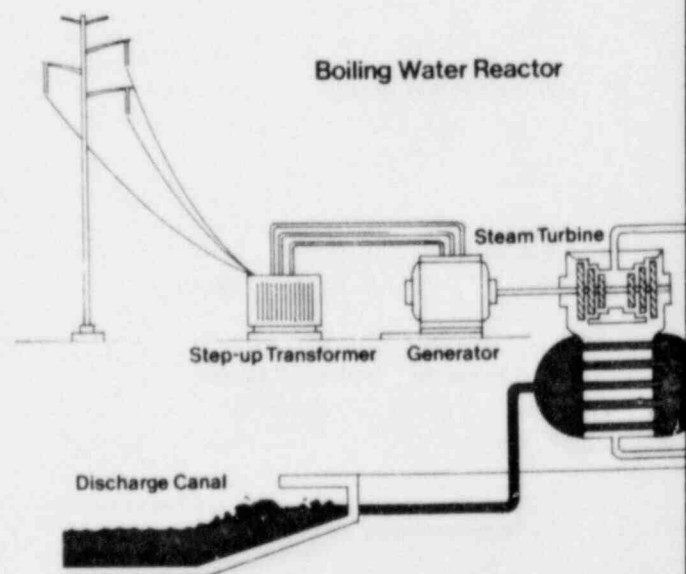
Cooling Cycle

Water from the Cape Fear River is piped through the condenser tubes where it absorbs heat from the steam and flows out to a discharge canal and into pipes extending 2,000 feet into the ocean. The water passing over the reactor core is kept separate from the water that is discharged into the ocean.

Nuclear Terms

You and your family may wish to become familiar with the following terms used frequently in referring to the operation of a nuclear plant:

Chain Reaction — the self-sustaining reaction that occurs when a neutron splits an atom, releasing heat



and additional neutrons to cause other atoms to split in the same way.

Containment Structure — a steel and reinforced concrete structure that houses the reactor vessel and supporting equipment.

Control Rods — cylindrical rods made of a material that absorbs neutrons. They are used to control the fission process. When the rods are pulled out of the reactor core, fission increases. When inserted into the fuel, the reaction is slowed and can be stopped.

Criticality — the point at which a continuing chain reaction has been reached. The plant can then begin to produce power.

Emergency Core Cooling System — one of the systems that provides an emergency supply of cooling water to the core of a nuclear reactor in the event that coolant is lost.

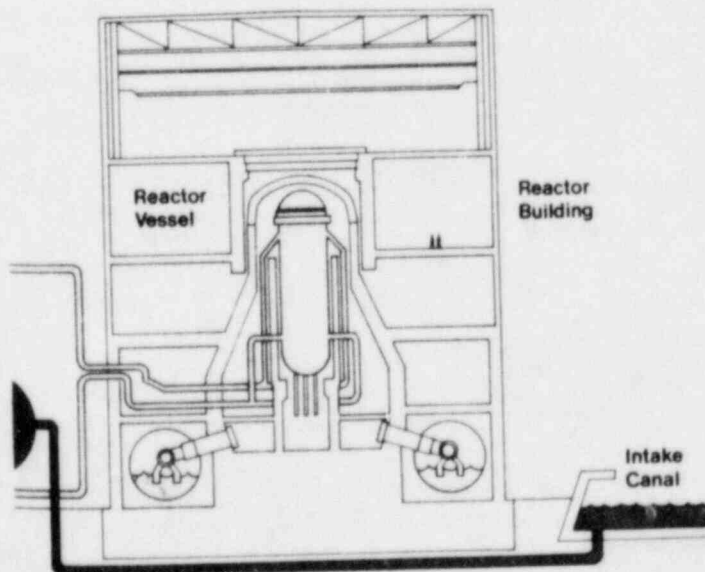
Fission — the splitting of an atom into two new atoms. When a uranium atom splits, the result is two new atoms, neutrons and heat.

Fuel Rods — cylindrical rods 12 feet long that contain the uranium fuel pellets.

Boiling Water Reactor (BWR) — a reactor in which water is boiled in the reactor vessel to produce steam to drive turbine generators to make electricity. The other type of reactor used commercially is the pressurized water reactor (PWR).

Reactor Vessel — a large steel vessel that contains the uranium fuel and control rods. Water is heated inside this vessel as it circulates around the fuel rods.

If you have questions or would like additional information about the Brunswick nuclear plant, please give us a call. The main telephone number for the Brunswick Information Center is 457-6041.





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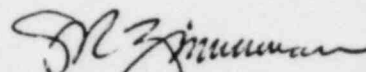
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