

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )  
COMMONWEALTH EDISON COMPANY ) Docket Nos. 50-456  
(Braidwood Station, Units 1 and 2) ) 50-457

AFFIDAVIT OF LAWRENCE D. BUTTERFIELD, JR.  
(Concerning Respiratory Protection)

I, Lawrence D. Butterfield, Jr., being first duly sworn, hereby depose and state:

1. I am employed by Commonwealth Edison Company ("CECo") as Manager of the Nuclear Services Technical Department. I have been employed by CECo in that position since June 1984. As Manager of the Nuclear Services Technical Department, I am responsible, among other things, for the Emergency Planning Section. That Section is responsible for the development, maintenance and modification of the Company's on-site emergency plans for its nuclear power plants, and for the development of plans and schedules for the emergency planning drills with State and local government agencies. The Section also works with State and local agencies to develop, modify and implement their emergency plans. The Emergency Planning Section's activities include day-to-day contact with state and local officials as well as individuals residing in the plume exposure pathway Emergency Planning Zones ("EPZ") surrounding the Company's nuclear power reactors.

2. I have been involved in emergency planning for nuclear power plants for at least the last six years. The Company's employees are trained for and perform special assignments in the event of an emergency at a nuclear power plant. I have received training for various positions, including Technical Support Manager, Engineering Director, and Intelligence Director. I have also participated in at least one drill/exercise a year for about the last six years, and I have been a controller at other exercises.

3. I have been with Commonwealth Edison about nineteen years. During that time, I have had assignments at Dresden Station as Administrative Assistant to the Superintendent, a Supervisor of Engineering Analysis in the Nuclear Fuel Services Department, an Engineer in the Nuclear Licensing Department, and a Section Engineer in the Station Nuclear Engineering Department. I have a Bachelor's Degree in Electrical Engineering and a Master's Degree in Nuclear Engineering, both from the University of Florida. I am also a Registered Professional Engineer in the State of Illinois.

4. The purpose of this Affidavit is to address a question raised by the Atomic Safety and Licensing Board during the emergency planning hearings held in October 1985. During those hearings, it was noted that previous emergency planning brochures prepared by CECO for certain of its other nuclear power plants had contained the following statement:

If you must go outside, place a handkerchief or a protective mask over your nose and mouth. 1/

This statement was deleted from the brochure for the Braidwood Station. In light of this deletion, the Board requested CECo to provide information explaining "...why this particular provision was deleted from the current brochure when it appeared in the Company's prior brochures." (Tr. at 562.) 2/

5. The respiratory protection statement quoted above first appeared in the emergency brochure issued for the Dresden nuclear power station in 1981. The language was subsequently included in the 1982 and 1983 revisions of that brochure, and was also included in the brochures for the Zion nuclear power station during the same time period. In the fall of 1983, CECo distributed a reformatted brochure for Byron Station which, for the first time, deleted the respiratory protection statement. Neither the Byron brochure, nor the Braidwood brochure ever contained the above quoted statement. At the present time, none of the current CECo emergency planning brochures contain that statement.

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1/ A copy of a previous version of the emergency brochure for the Zion Station is attached.

2/ Transcript citations are to the transcript of the emergency planning hearings held in this proceeding on October 29, 1985.

6. During the preparation of the Byron brochure in 1983, CECo decided to eliminate the respiratory protection language from the brochures for a number of reasons. First, placing a handkerchief or other covering over the mouth and nose is a meaningful precaution only in a small number of accident scenarios involving offsite particulate releases. It provides no protection in the event of gaseous releases resulting from a nuclear power plant accident. Second, the use of a handkerchief or other hand-held mask would provide only minimal protection even where particulates are released. During an emergency, it is highly unlikely that persons, including children, responding to a shelter-in-place or evacuation announcement would be able continuously to hold a covering over their noses and mouths while taking other required protective actions. Third, attempting to hold a covering over the face during an evacuation could hinder or impair a person's ability to take other necessary actions, such as driving a car, or leading small children. Finally, such an instruction might create a false sense of security and could result in persons within the EPZ taking unnecessary risks or delaying evacuation.

7. On balance, CECo believes that the better practice is to give specific instructions regarding respiratory protection at the time of the accident. If particulates were released,

offsite authorities could issue instructions at that time regarding the use of face coverings. Generally, however, evacuation would most likely be ordered prior to any radioactive release, thus eliminating the need for any such instructions.

8. At the time CECo decided to delete the respiratory protection statement in the fall of 1983, CECo's Emergency Planning Section was aware that the NRC Staff, in connection with the emergency brochure for Big Rock Point Plant, had concerns similar to those of CECo regarding respiratory protection. In that brochure, the Licensing Board had ordered the insertion of the following instruction:

"[i]f you are asked to evacuate, first put on a dust mask or breathe through a damp handkerchief to filter out any dust in the air."

Consumers Power Company, (Big Rock Point Plant), LBP-82-60, 16 NRC 540 (1982). Subsequently, NRC Region III ordered the deletion of the statement as technically inappropriate for reasons similar to those of CECo. The Board was advised of the deletion on October 22, 1982. On September 25, 1984 the Licensing Board explained the NRC Staff's technical basis for the deletion:

Normally evacuation would be ordered as a precautionary measure some time before an actual release of radioactive material might occur. Wearing a dust mask or holding a handkerchief over the nose would, Staff believes, tend to delay evacuation and might interfere with driving and create a safety hazard. Respiratory protective measures should

be utilized only upon the specific direction of offsite authorities at the time of an accident; such directions would be issued if radioiodines or particulate material is released, and normally sheltering, rather than evacuation, would be ordered in that situation.

Based on these factors, the Board agreed that the provision had been properly deleted from the emergency brochure.

Consumers Power Company, (Big Rock Point Plant), LBP-84-38, 20 NRC 1019, 1024 (1984).

9. During the hearings held in October 1985, in this proceeding, Mr. Gordon Wenger, Emergency Planning Specialist, Technological Hazards Branch, Federal Emergency Management Agency ("FEMA") testified that the respiratory protection statement was not required to be included in the emergency brochure for Braidwood for reasons similar to those noted earlier as well as those approved by the Licensing Board in Big Rock Point Plant. (Tr. at 539, 553-561.) Mr. Wenger concluded that the emergency information brochure was adequate and met FEMA requirements. (Tr. at 552-553.) Recently, FEMA issued a "Policy Statement on Respiratory Protection" concurred in by the NRC Staff, in response to the Board's questions in this proceeding. In its Policy Statement, FEMA noted that the inclusion of specific language regarding respiratory protection is not mandated by NUREG-0654/FEMA Rep. 1, Rev. 1, Section G.1.c., and that the exclusion of such language would not render a brochure inadequate. Although,

as a general matter, FEMA recommends that brochures contain some language on respiratory protection, FEMA also recognizes that such language might be inconsistent with the policy of local jurisdictions and thus should not be included in the brochures.

Protective actions information included in the brochure, like all the information in the brochure, is required to be a reflection of the public policy for protective actions. A jurisdiction might feel that a particular action is not acceptable. Thus requiring information within the brochure on protective actions not intended for general use might confuse rather than inform.

In the case of Braidwood, the State of Illinois has concluded that inclusion of instructions on respiratory protection, as a routine procedure, would tend to confuse rather than inform the public. Instead, the State would prefer to provide instructions on respiratory protection to the extent needed, at the time conditions resulting from an emergency warranted such instructions.

10. I have been authorized to state that the Illinois Department of Nuclear Safety agrees with CECO's position regarding respiratory protection as set forth in paragraphs 6-9 of this affidavit.

  
\_\_\_\_\_  
Lawrence D. Butterfield, Jr.

Subscribed and Sworn to before me this 10th day of JANUARY, 1986.

  
\_\_\_\_\_  
Notary Public

My Commission expires APRIL 6, 1989

# **What To Do In Case Of A Nuclear Station Emergency**



## Dear Resident:

In the unlikely event that a serious accident occurs at a nuclear generating station, we want you to know about the emergency plans for your area. Because plans of this kind work best when the participants know what to do, we are providing this booklet to all households and businesses within a 10-mile radius of each nuclear station.

Although this information concerns nuclear incidents, most of it applies to any emergency. Please read it, save it, and share it with your family.

If you have any questions or would like additional information, please write: Supervisor of Public Affairs, Commonwealth Edison Company, P.O. Box 767, Chicago, Illinois 60690.

COMMONWEALTH EDISON

## Emergency Instructions

Nuclear generating stations cannot explode. If there was an incident, unlike other man-made or natural accidents, there would be time to take precautionary measures. Also depending on atmospheric conditions, only limited areas would be affected. If there ever is a problem:

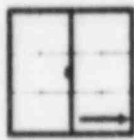
Stay indoors until you are instructed to do otherwise.



Stay tuned to your radio or television stations for information and instructions. (Refer to pages 10 and 11 in this booklet for specific information concerning your area.)



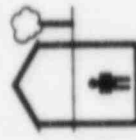
Close all windows and doors tightly.



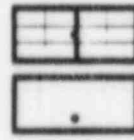
Turn off all combustion heating and cooling systems.



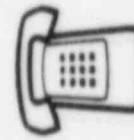
If your building has a basement, take a radio and go there.



If you do not have a basement, keep away from doors and windows.



Use the telephone only in emergency situations.



This information pamphlet for residents near the Zion Nuclear Station is part of the continuing emergency planning by the Illinois Emergency Services and Disaster Agency, the Wisconsin Division of Emergency Government and Commonwealth Edison Company.

## Nuclear Emergency Protection

The purpose of this booklet is to tell you what to do in case of a nuclear generating station emergency, although such an emergency is a very remote possibility. But, because it *could* happen, we have to be prepared. For that reason, we think it's important that you not only understand the plan but also radiation and how it affects us all.

First, radiation is simply energy which travels in the form of particles, or bundles called waves. One kind cooks our food in microwave ovens. Another is the x-ray. A third, the radio wave, carries sound. Yet a fourth, a wave of higher energy, transmits TV pictures.

But radiation isn't just man-made. It's a natural phenomenon, too, all around us, all the time. It comes from the sun, the stars, the soil beneath our feet, the air we breathe, the water we drink, the food we eat, the stone, brick or wooden walls that shelter us, even the potassium and carbon in our own bodies.

To measure the amount of radiation a person receives, a unit called millirem is used. In the northern Illinois area natural background radiation results in an annual radiation dose of 100 millirem. Someone standing at a nuclear plant boundary for a year would receive an extra  $\frac{1}{2}$  millirem. An x-ray may expose the affected part of the body to 75 millirem or more.

To be sure, radiation can be dangerous. But that depends on the amount we receive. As you can see from the preceding paragraphs, we're all exposed to low levels of radiation every day of our lives. But because we can't see it, feel it, smell it, hear it or taste it, it's easy to fear it. And panic can be the most pervasive danger in the event of a nuclear station emergency.

Studies which tracked people exposed to far more radiation than people normally receive in the northern Illinois area have found no excess leukemia, other cancers, or genetic damage due to low-level radiation.

This plan is designed to prevent people from being exposed to large amounts of radiation if a serious accident actually occurred. Sheltering, or in extreme cases, evacuation would be recommended as needed to keep radiation exposure to the general public well below the limits for nuclear plant workers of 5,000 millirem.

What all this means is that we shouldn't panic at the first warning of a nuclear station accident. We should take precautions, however, just as we would during a tornado. Or, in the case of a chemical spill, when it's often necessary to evacuate an area.

Like so many other things we live with, radiation can be harmful. But treated with caution and common sense, it needn't be frightening.

## The Plan

In the event of an accident at a nuclear generating station involving a potentially dangerous release of radiation, the Illinois Plan for Radiological Accidents will go into operation immediately.

When it does, it triggers a coordinated effort on the part of the Illinois Emergency Services and Disaster Agency, Commonwealth Edison, the Illinois Department of Nuclear Safety, the Nuclear Regulatory Commission, the state of Wisconsin, other state agencies, local governments, emergency workers, the American Red Cross and the Salvation Army. These groups have only one goal—to protect the public.

That means no one should be confused or misinformed. The minute any emergency is declared, the Emergency Broadcast System will also go into effect. All radio and television stations in the area will continually update the situation and provide people with information on how to protect themselves and their families.

Special attention has been paid to the needs and concerns of people living within a 10-mile radius of nuclear power plants in Illinois. After a thorough study, the Nuclear Regulatory Commission set 10 miles as the maximum distance which could require shelter or evacuation during an accident. This 10-mile radius is called the Emergency Planning Zone and people within the zone will have sirens to notify them of an emergency. The plant and emergency personnel within the 10-mile radius practice the plan periodically.

## What To Do And When To Do It

You'll be warned in several ways, just as you would be during a tornado alert: over the radio, television or public-address system, by siren, even by word of mouth. The signal for areas having sirens is a three to five minute steady tone which means take shelter and turn on your radio or television. Local radio stations are listed on page 11.

If you didn't hear it on the radio or TV, though, be sure to turn on one or the other as soon as you can and then stay tuned. They're your best sources of reliable, up-to-the-minute information and instructions (traffic reports, shelter locations, evacuation directions, etc.). Commonwealth Edison will keep the media up to date on the plant status and the Illinois Emergency Services and Disaster Agency and the Wisconsin Division of Emergency Government will update the media on recommended actions for the general public.

*Do Not* call the police or sheriff or fire department or anyone else unless it's absolutely necessary (and then

limit your call to one minute if you can). The phone lines have to be kept open for use by emergency personnel.

Finally, respond promptly to all instructions. If you're asked to take shelter indoors and remain there, do it quickly. Do not evacuate. If you're asked to evacuate the area, get your family together, pack quickly (see checklist), plan your route, and leave as soon as possible.

### Staying Indoors: "Shelter-In-Place"

A *shelter-in-place* announcement means "stay indoors" or "get indoors." This is the most likely protective action. Evacuation is much less likely and in many cases affords less protection than shelter-in-place. If you're outside at the time shelter is recommended, head for home immediately (or, in a pinch, for any place that'll take you). Wherever you end up, though (even if you are in a car), take the following precautions to reduce the risk of radiation exposure.

1. Make sure the doors and windows are shut and tightly sealed.
2. Turn off the combustion heating or cooling system if it's bringing air in from the outside (if instructed to do so).
3. Take a radio or television and move to the basement if you have one. If not, stay away from the doors and windows.
4. Keep everybody—including pets—inside, stay calm, and tune into a local radio or television station for further instructions.
5. Refer to pages 10 and 11 in this booklet for information on evacuation routes and Primary Relocation Communities in your area in case instructions are changed to "evacuation."
6. If you are not within the take-shelter area, do not enter it. When it is safe to re-enter the area, you will be informed.
7. If you must go outside, place a handkerchief or a protective mask over your nose and mouth. Limit your time outside as much as possible.

### Evacuation

Do not try entering the evacuation area for any reason whatsoever. If you've been asked to evacuate, do not hesitate or waste time trying to take all your possessions with you. Instead:

1. Gather your family together. If your children are in school and the school is in an evacuation zone, do not try to pick them up. They will be transported out of the area to a safe location where you may go to get them. The same applies for nursing home residents and hospital patients.
2. Pack only essential items (see checklist on page 9).
3. Turn off gas, electricity and water to the same extent as if you were leaving for a week.
4. Lock the windows and doors.
5. Don't get on the road with a car in poor running condition or that has a nearly empty gas tank. Car-pool with a neighbor or call your local Emergency Services Coordinator on the phone number listed on page 11.
6. Keep your pets indoors unless you have a place to go other than the designated Relocation Centers. *Relocation Centers will not accept pets.* If you do have a place to take them, bring them along. But then, remember to take leashes, dishes, carriers, etc., and a supply of pet food.
7. If you have livestock, shelter them. And, if possible, make provisions for feeding and watering them. Stored feed should be used if possible. As soon as it's safe, you'll be permitted to return and care for them.
8. Know where you're going... which direction is safe, which routes are open, where you can stop for the night, etc.
9. Don't rush. You're a lot more likely to get hurt that way than you are by the release of radiation.

## Words To The Wise: Preparing For Emergencies

Since you may have to leave your home on short notice for any one of a number of accidents including nuclear, flooding and chemical spills, you can do some things now to make things easier later. Here are four sensible ways to prepare yourself for *any* emergency.

1. Collect your important papers and store them in a safe place. They should all be together so that you can take them with you, if you want, without wasting time searching for them.
2. Set aside another place for emergency gear such as flashlight, extra batteries, extra sets of car keys, First Aid kit, fire extinguisher, and other items that you may want quickly.
3. Make a list of things you'll need to take with you, and make sure you always have them on hand.
4. Keep your car in good running order with an adequate supply of fuel.

### For The Disabled

Special provisions will be made to provide care and transportation for all the disabled. It is important that you let your needs be known, so contact in advance your city or county Emergency Services Coordinator as listed at the back of this brochure.

### For More Information On:

#### **Nuclear Power**

Supervisor of Public Affairs, Commonwealth Edison Company, P.O. Box 767, Chicago, Illinois 60690

#### **Radiation**

Radiation Hot Line, Argonne National Laboratories (toll free), Illinois 800/942-9440  
Outside Illinois 800/323-1364

#### **State Protection Action Plans**

Illinois Emergency Services and Disaster Agency  
Public Information Office  
110 East Adams Street  
Springfield, Illinois 62706

Wisconsin Division of Emergency Government  
4802 Sheboygan Avenue  
Madison, Wisconsin 53702

For local protective plans, contact your city or county Emergency Services Coordinator as listed on page 11.

If you are disabled, or without any means of transportation, or know of someone who needs special help, contact your city or county Emergency Services Coordinator in advance.

## What You May Want To Take Besides Your Loved Ones

These are only general suggestions for any evacuation. They obviously don't apply to everyone. Shelters in host towns will provide food and bedding.

### **Clothing**

- A. Enough seasonal clothing for one week

### **Medical Supplies**

- A. First Aid kit
- B. Prescription medicines and prescriptions

### **Personal Items**

- A. Soap and towels
- B. Shaving articles
- C. Toothpaste and toothbrushes
- D. Sanitary supplies
- E. Required papers (auto registration and credit cards)

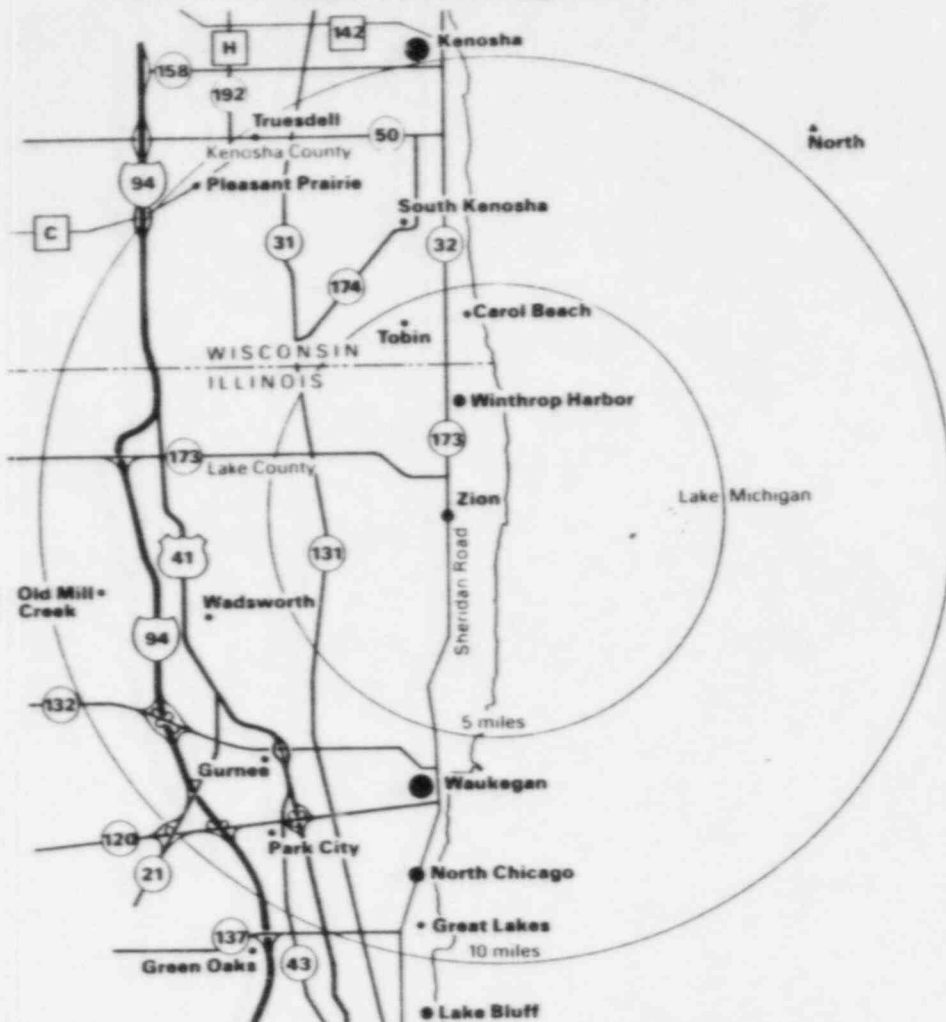
### **Children And Infants**

- A. Disposable diapers and powder
- B. Bottles
- C. Milk/formula

### **Other Supplies**

- A. Flashlight
- B. Candles/matches
- C. Portable radio/batteries
- D. Plastic or paper bags
- E. Hand tools (for car repairs)

## 10-Mile Emergency Planning Zone



## Relocation Communities And Directions

The following communities are likely to serve as host shelter areas in the event of an evacuation request. To plan your route, travel to one of the roads shown on the map, use the map to get to one of the major highways, and follow the directions below to the host shelter areas. Additional or alternate communities and routes may be utilized, depending on weather and road conditions. Specific emergency information about what to take, what relocation centers will be open, and how to get there will be broadcast as information becomes available by the radio stations that are listed on page 11.

### Illinois

- McHenry/Woodstock via Illinois Route 131 South to Illinois Route 120 West.

- DesPlaines via U.S. Route 45 South, or Interstate 294 South to U.S. Route 14 West.
- Park Ridge via U.S. Route 45 South, or Interstate 294 South to U.S. Route 14 East.
- Elk Grove Village via U.S. Route 45 South, or Interstate 294 South to Illinois Route 72 West.
- Buffalo Grove via U.S. Route 45 South to Illinois Route 83 South, or Interstate 94 South to Illinois Route 22 West to Illinois Route 83 South.
- Wheeling via U.S. Route 45 South to Illinois Route 68 West, or Illinois Route 43 South to Illinois Route 68 West.

### Wisconsin

- Whitewater via Wisconsin Routes 50 and 142 West to U.S. Route 12 West.

## Primary Emergency Information Radio Stations:

WMAQ-670-AM  
 WXLG-102.3-FM  
 WLIP-1050-AM

## Emergency Services Coordinators

The disabled and those requiring transportation for an evacuation should contact in advance their Emergency Services Coordinator listed below.

Director or Deputy Director  
 Kenosha County Emergency Government  
 Court House, Room 1  
 Kenosha, Wis. 53140  
 414/656-6595

Assistant County Administrator  
 Lake County Courthouse  
 Waukegan, Ill. 60085  
 312/689-6603

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NUCLEAR REGULATORY COMMISSION

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	)	50-457-OL
COMMONWEALTH EDISON COMPANY	)	
	)	
(Braidwood Station, Units 1 and 2)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the attached COMMONWEALTH EDISON'S RESPONSE TO THE BOARD'S QUESTIONS REGARDING RESPIRATORY PROTECTION were served on the persons listed below by deposit in the United States mail, first-class postage prepaid, unless otherwise indicated, this 21st day of January, 1986.

Herbert Grossman, Esquire  
Chairman  
Administrative Law Judge  
Atomic Safety and Licensing  
Board  
U.S. Nuclear Regulatory  
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Washington, D.C. 20555

Dr. Richard F. Cole  
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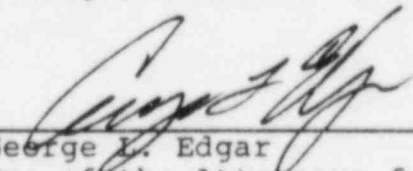
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\_\_\_\_\_  
George L. Edgar  
One of the Attorneys for  
COMMONWEALTH EDISON COMPANY

Dated: January 21, 1986