

DOCKETED
USNRC

'83 JAN 25 10:49

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:
James P. Gleason, Chairman
Frederick J. Shon
Dr. Oscar H. Paris

In the Matter of)

CONSOLIDATED EDISON COMPANY OF)
NEW YORK, INC.)
(Indian Point, Unit No. 2))

Docket Nos.
50-247 SP
50-286 SP

POWER AUTHORITY OF THE STATE OF)
NEW YORK)
(Indian Point, Unit No. 3))

January 24, 1983

POWER AUTHORITY'S TESTIMONY OF
ROBERT L. DuPONT, M.D.,
ON COMMISSION QUESTION 1

ATTORNEYS FILING THIS DOCUMENT:

Charles Morgan, Jr.
Paul F. Colarulli
Joseph J. Levin, Jr.

MORGAN ASSOCIATES, CHARTERED
1899 L Street, N.W.
Washington, D.C. 20036
(202) 466-7000

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION.....	1
II. THE NATURE OF THE FEAR OF NUCLEAR POWER.....	3
III. THE MAJOR PSYCHOLOGICAL FORCES BEHIND FEAR OF NUCLEAR POWER.....	12
IV. THE POTENTIAL FOR OVERCOMING FEAR OF NUCLEAR POWER.....	18
V. CONCLUSIONS.....	20
REFERENCES.....	23

POWER AUTHORITY'S TESTIMONY OF ROBERT L. DUPONT, M.D.,
ON QUESTION 1: RISK OF NUCLEAR POWER IN PERSPECTIVE

My name is Robert L. DuPont. I am a Clinical Professor of Psychiatry at Georgetown University Medical School, President of the Phobia Society of America, Inc., President of the Institute for Behavior and Health, Inc., and from 1973-1978 was the Director of the National Institute on Drug Abuse. In 1978, 1979, and 1980, I chaired Special Sessions on the "Treatment of Phobias" at annual meetings of the American Psychiatric Association. In 1979, I was asked by the non-profit Media Institute to review network television news coverage of nuclear power between 1968 and 1979. This led to publication of "Nuclear Phobia -- Phobic Thinking About Nuclear Power." In October 1981, I participated in an international conference at Ditchley Par, England, on the media coverage of nuclear power. A statement of my professional qualifications is attached.

I. Introduction

This testimony addresses Commission Question 1, which states:

What risk may be posed by serious accidents at Indian Point 2 and 3, including accidents not considered in the plants' design basis, pending and after any improvements described in (2) and (4) below?[1]

1. Memorandum and Order, Appendix at 1 (Nov. 15, 1982) (the

The evaluation of the risks of Indian Point should be based not only upon quantitative analysis, but also upon an examination of the risk perceived by some residents of the area surrounding the plants. This testimony presents a qualitative analysis of the bases for this perception. A complete understanding of these bases adds a useful perspective for decisionmaking on issues of risk in this proceeding.

For over 25 years, nuclear power has been used to produce electricity in the United States. There are now 73 nuclear power plants producing about 12.5 percent of the electricity in this country (Ref. 1). Nuclear power is also an important producer of electricity around the world, with a total of almost 200 nuclear plants operating in 22 countries on five continents (Ref. 2).

While the electricity produced by nuclear power plants is not different from that produced by coal, oil, or hydroelectric plants, there is one product of nuclear power plants which is different: fear.

This widespread public fear exists despite the fact that during these 25 years of commercial nuclear generation of electricity, no member of the public and no nuclear worker has been killed as a result of a radiation or other "nuclear" accident anywhere in the United States. This is a

full text of Question 1 is not reproduced here).

paradox which bedevils nuclear power: a crippling public fear in the face of verifiable evidence of an excellent safety record. This paradox is especially striking considering the fact that many people fear a means of generating power -- nuclear -- and yet do not fear the product -- electricity. This is despite the fact that in 1981, in upstate New York alone, 25 people were electrocuted (Ref. 3).

While I will not review the evidence of the safety of nuclear power as it has actually operated -- including accidents such as the costly and well-studied one at Three Mile Island in 1979 -- I will examine the paradox of fear in the presence of relative safety, because I am convinced, after three years of study of this specific problem, that the paradox can be explained on the basis of accepted psychological principles. I will also relate the operation of these basic psychological principles to the political opposition to nuclear power and sketch some ways in which this unrealistic fear of nuclear power could be reduced.

II. The Nature of the Fear of Nuclear Power

The most striking aspect of the fear of nuclear power is the contrast between the perceived risk on the one hand and the actual safety record on the other hand. Because both the fear and the safety record are well-known, how is it possible that the public did not long ago correct its

misperception? To answer this question, one must know more about fear, especially the irrational aspects of fear.

For the last five years, I have specialized in studying phobic thinking and in treating people with phobic fears. These fears are often severely crippling and are resistant to rational arguments. These phobic fears include fears of bridges, tunnels, elevators, and airplanes. In most cases, there is some danger (bridges do collapse, elevators do get stuck, planes do crash), but the risks in these everyday settings are so low that most of us accept them as a matter of course. Not the phobic person. For the phobic person, the recitation of the actual safety record of bridges or airplanes is not reassuring.

I want to make it clear that these people with phobic fears do not have a mental illness in the sense that they are not psychotic, "disturbed," or "crazy." Rather, they are normal people who have an exaggerated and specific fear that is out of proportion to the actual danger or risk that exists. They "think phobically" about things that either do not frighten most people or merely make the prudent person nervous. For example, many people are nervous when taking an airplane flight. The phobic person is so frightened of flying, despite the excellent safety record of the airline industry, that he will not fly. The prudent person will not put his hand in a snake's mouth. The phobic person will not cross a field because there could be a snake in the grass,

the snake could be poisonous, and he could be bitten by the snake. Additionally, we cannot guarantee the phobic person that this will not happen.

Phobic thinking can thus be disruptive, even crippling, in someone's life. This kind of thinking can override the phobic person's ability to make balanced, prudent assessments of the actual risks in his life. It is my experience that when a person thinks phobically, this thinking stands in marked contrast to the sensible, rational manner in which such a person typically makes other decisions in his life.

The chief characteristic of these "phobias" is "what if" thinking rather than "what is" thinking. For example, can I, as a psychiatrist, tell my patient who fears getting on an airplane that it is totally certain that HIS plane will not crash? No, I cannot. He can always say, "But it could crash," and he is right. If no airplane crashed for the next 50 years, the phobic ("what if") argument still holds because it is not based on actual experience, but on what could happen. Even with 50 years of complete safety in the air, the fearful non-flyer cannot be completely reassured: the one plane he steps onto might crash. Actual experience is not reassuring to many fearful people. They shift the argument from "what is" (or what has been) to "what if" (or what might be). Once that shift has taken place, rational arguments are irrelevant because the source

of the fear is the fearful person's own inner terrors, not the actual risk to physical safety.

While I am drawing on my clinical experience with phobic people in considering the fear of nuclear power, I do not think that all people who either fear or oppose nuclear power are phobic. Understanding phobic thinking, however, provides a helpful basis for explaining why some people fear nuclear power. Such people are very afraid of nuclear power (a "what if" risk) and yet, without fear, travel in their cars (a "what is" risk) to protest it. The fear they feel is out of proportion to the actual risks, which are in many cases known to these people. This is phobic thinking. Understanding the widespread fear of nuclear power is made easier by recognizing the analogy of phobic fear.

There is another, related paradox in the fearful avoidance routinely seen in the behavior of phobic people: their fear is less the fear of physical danger (such as the fear that the elevator may get stuck or that the airplane may crash) than it is the fear of the feelings the fearful person experiences when exposed to the fear-provoking stimulus (the elevator or the airplane, for example), or even the thought of this stimulus. Thus, while the phobic person may be convinced that the frequency of the elevator getting stuck or the airplane crashing is low, the frequency of the fearful feeling is high. Every time the phobic person confronts or thinks about his phobic stimulus, he feels great

distress, even if he is in no actual danger. Thus, the underlying threat is often less the threat of physical harm than the threat of painful feelings. These feelings can sometimes be so severe that they are called "phobic panic."

Although those who fear airplanes are often poorly informed about the scientific facts of airline safety (including such issues as design, manufacture, maintenance, and operation of the airplanes, as well as management and regulatory controls), these facts are available and are sometimes brought into the argument (as was the case when a DC10 crashed in Chicago three years ago and much sophisticated discussion went into supporting the fear of flying on that particular plane). In the nuclear power debate, the existence of a political opposition to nuclear power, an opposition which is often technically sophisticated, makes it appear that the risk of nuclear power is greater than we rationally know it to be. That is, these opponents can often discuss the mechanics of nuclear reactors and their possible accidents in a technically competent manner. This does not mean, however, that such accidents are likely to happen.

In any event, whether the fearful person fears airplanes or nuclear power plants, and whether he is technically sophisticated or not, the central argument holds: as long as the discussion of health hazard is restricted to actual experience (and not to "what if" thinking), then the

paradox I am exploring is unmistakable because fear is widespread despite an excellent safety record.

It is essential to our understanding of the fear of nuclear power to recognize that the problem the fearful person has, in the end, is not the external stimuli associated with the fear -- it is not the airplane or the bridge or the nuclear power plant. Although the fearful person knows that the situation he fears is highly unlikely, the fear can be so intense as to seem unbearable. This is the problem. This is critical to understanding both prevention of fear and treatment of phobias: to overcome a phobia, the phobic person needs to recognize that the fundamental problem is inside himself and not in his environment. It is not possible to entirely solve the problem of fear of airplanes by avoiding airplanes, by promoting a greater understanding of how airplanes work or by enforcing more stringent regulation on the airlines. The fearful person will still be afraid of airplanes because the "what if" thinking will still exist. The plane could still crash. (Planes can even crash and kill people on the ground -- at least 12 people were killed in this manner in 1982 (Ref 4). Yet, despite this "what is" danger, few people who fear nuclear power scan the sky to see if a plane is about to fall on them.)

That the problem of the fearful person is inside himself is illustrated by the fact that phobic people often report that they spend hours every day worrying about an

event they know to be unlikely. They especially worry about how they will act in a situation they fear. I have spoken to many people who are afraid to fly. They tell me that they are afraid they will panic on an airplane, that they will lose control of themselves, perhaps faint, scream or in some ill-defined way simply "go berserk." They know that airplanes do not crash very frequently. They are afraid of their own fear.

Similarly, people who are inordinately fearful of nuclear power are often afraid of how they, or people like themselves, will react should a nuclear accident occur. They fear that people who are sensible and responsible, as they are, will behave in a senseless and irresponsible manner.

Such fears are groundless. For example, when airplane phobics are able to actually take a flight on a plane, none has panicked. While there has never been a nuclear accident requiring prompt public action, I am convinced that fears that people will behave callously or irresponsibly are just that: fears only. Experience has taught us that, when dealing with emergencies, people behave competently, responsibly, and sensibly.

In fact, in an actual emergency, when even the phobic person must face his fear to ensure his own personal safety or to help another person in distress, the phobic person, unlike the psychotically disturbed person, will behave

rationality and effectively. It is a commonplace observation in the treatment of phobic people that they will, in a crisis, do what needs to be done, even if that means temporarily overcoming their fear. The mother who does not drive because of a phobia will not hesitate to drive an injured child to a hospital.

In real-life emergencies, phobic people do not panic or behave irrationally. Their fear of loss of control is one more "what if" fear. It does not happen -- phobic people do not act panicky or irrationally -- even though they feel that they "might." This is a vitally important point in the treatment of phobic people. Those who fear driving do not lose control in a car, for example, even when they feel their full-blown phobic panic feelings after years of not driving. Similarly, phobic non-flyers often fear they will panic and lose control of themselves in an airplane if they fly. This does not happen. What does happen, especially early in treatment, is the phobic person may leave the airplane prior to take-off. However, once the door is closed, despite feelings and anticipation to the contrary, phobic people do not panic or act irrationally.

Note that many phobic fears involve technologies. As new technologies have been introduced, each produced widespread public fears. Cars, trains, airplanes, natural gas, and electricity brought into the home, for instance, all produced widespread fears when they were introduced. The

initial fears soon subsided for most people as the technologies became more familiar. This reduction occurred almost without regard to the actual danger of the technologies involved. For example, riding in an automobile is not "safe," in any absolute sense, but few people are afraid to ride in a car in America today. Sad to say, there is so little fear that more than 80 percent of Americans do not use seat belts, which could save at least 25,000 lives a year (Ref. 5).

This observation makes clear the often irrational aspect of fears and the extent to which they are not based on real risks to health or even to life itself. While the vast majority of the public quickly learns to accept new and potentially dangerous technologies, this process is not universal: fear of flying in airplanes remains common -- about 25,000,000 Americans are afraid to fly -- despite the excellent safety record of commercial aviation (Ref. 6). I will return to this example later because it has major parallels to the fear of nuclear power.

There are several factors, however, which combine to make fear of nuclear power unique. The first is that it is a relatively new technology. Second, nuclear power is associated in many people's minds with deadly nuclear weapons. Third, the dangers of nuclear power seem mysterious because radiation cannot be sensed directly and because if harmful exposure has occurred, effects can be delayed and uncer-

tain. Fourth, the "what if" risk of nuclear power is seen as "imposed," rather than voluntarily accepted: thus, one may, as an individual, choose to get on an airplane or to avoid it, while potential risks from nuclear power, however small they may be, are not always chosen by the individual on whom they fall. Fear of nuclear power has also proved more persistent than many other fears because, in contrast to such phobic stimuli as bridges, automobiles or airplanes, few people come in contact with nuclear power plants precisely because there are relatively few of them and because federal regulations restrict public visiting of the plants. Fear of nuclear power, in contrast to most other phobic fears of technology, is spread and reinforced by political and media voices.

To recap: The fear of nuclear power has phobic elements because it is a "what if" fear. Like the fear of most new technologies, it is widespread. Several factors make fear of nuclear power more common, more severe, and more persistent than fears of other technologies.

III. The Major Psychological Forces Behind Fear of Nuclear Power

There are four easily understood, but irrational, psychological factors at work distorting the public perception of risk from nuclear power. The first is whether the risk appears to be from one single big event or from many smaller

events spread out over time and space. The risks associated with single, big events seem worse than those associated with distributed risks. To understand this factor, compare the fear produced in the public by an airplane crash with that produced by an automobile crash. On January 13, 1982, a plane crashed into the Potomac River in Washington, D.C., producing front-page news all over the world, not just for that day, but day after day. Even the Federal Aviation Administration hearing into the causes of the crash was widely reported, and much of it was carried live on National Public Radio. A total of 78 people died in that tragic accident (Ref. 7).

On that same day, approximately 134 people died equally tragically in car crashes in the United States (Ref. 8). What was the news value of the story about the highway deaths on January 13, 1982? Think about it: 134 died the next day and the next day and the next. The only way highway safety hits the headlines is if many people or many cars are involved in a single accident and, even then, the media coverage is minimal and usually local, as compared to that of plane crashes.

It is, therefore, not surprising that 25,000,000 Americans are so afraid to fly that they either do not fly at all, or severely curtail their flights. It is also not surprising that Americans do not fear driving a car and most do not wear seat belts, although some public health experts

believe this would reduce their risk of death and injury by at least 50 percent (Ref. 9).

The manner in which the media report stories about risks reinforces this exaggeration of one kind of risk and the minimization of the other. In reporting on nuclear power, in contrast to reporting on both airplanes and automobiles, there have been no deaths at all to write about. The nuclear news is about conflict, controversy, and accidents. These are often relatively minor industrial accidents. In over 25 years, there has never been an accident which has harmed the public and yet they are big news. The news is the "what if" element of the story. This kind of news reporting perpetuates the irrational fear of nuclear power.

In reporting on accidents at nuclear power plants, it is common for the media to report reassuring statements from the operators of the plants or from the Nuclear Regulatory Commission about the absence of health dangers. These reassurances are then "balanced," directly or by implication, with fear-inducing quotes from the opponents of nuclear power, who are often identified as "public interest" groups. These "public interest" quotes are generally "what if" messages that reinforce the fearful person's "what if" fears. One particularly egregious example of this reinforcement is the sponsorship or distribution by the New York Public Interest Research Group, Inc. of the pamphlet and

survey discussed in the Power Authority's Motion to Exclude Fear As An Issue In This Proceeding (Dec. 1, 1981). As I said in my affidavit in support of that motion, these documents "are explicitly designed to generate a fear reaction in the reader. These documents promote phobic thinking about nuclear power." Affidavit of Dr. Robert L. DuPont In Support of the Power Authority's Motion to Exclude Fear As An Issue In This Proceeding ¶ 6 (Dec. 1, 1981).

The second factor in the public's perception of risk which deeply affects attitudes toward nuclear power is the distinction between risks that the individual personally controls or thinks he controls and risks perceived to be controlled by others. We tolerate with relative ease those risks which we feel we can control; but, when risks appear to be imposed by others, we find them intolerable. Driving a car is a risky activity, but it is comfortably done by millions of Americans. The anti-nuclear political movement is based on the idea that nuclear power is an "imposed" risk: the ordinary citizen does not choose this risk and, therefore, it is unacceptable. Rational discussion of how big the risk itself is, or how it compares to other, more familiar risks, is thus avoided. In modern life, it is the issue of who controls the risk which activates political reactions to dangers of all kinds.

Think about an anti-nuclear demonstration -- about the mass of people blocking the gate to a nuclear power plant,

for example. Then think about when you last saw a group of protesters blocking the gate to a distillery. Nuclear power plant accidents have killed no one; alcohol kills about 200,000 Americans a year, over 500 each day (Ref. 10). Why not protest drinking alcohol? When was the last time a political movement got up a head of steam about the 90 percent of Americans who do not wear seat belts when driving or riding in their cars? This is one of the factors that distinguishes fear of nuclear power from fear of airplane crashes. Because the passenger voluntarily chooses to fly, there is no political opposition to flying. The fear of flying is not reinforced by a vocal and visible group of experts and political activists lending the fear an appearance of scientific and political legitimacy.

Note that nuclear power is not really an "imposed" risk at all, even though the anti-nuclear movement exploits the appearance that it is "imposed." The reality is that the existence of nuclear power in the United States is the result of an open, democratic political process involving the national political will. The risks of nuclear power are entered into by such shared decision-making.

The third factor in the public's perception of risk is whether the risk is familiar or unfamiliar. Familiar risks seem smaller, and unfamiliar risks seem greater. This principle underpins successful treatment of phobias. The elevator phobic, for example, is cured only by the sufferer's

repeated exposure to an elevator. The challenge is to get the phobic person into the elevator -- that is the hard work of treatment. Once the exposure occurs and is repeated, the fear diminishes, and elevator riding becomes easier.

When considering this third factor in the public's perception of risk, recall that most Americans have never knowingly seen a nuclear power plant, even at a distance. Also recall that Nuclear Regulatory Commission regulations restrict access to nuclear power plants. These regulations are an example of the extraordinary caution exercised by the Commission to ensure public safety. An unfortunate side effect of these well-meaning regulations, however, is that the public remains unfamiliar with nuclear power plants. Thus, in contrast to most other fear-producing technologies, such as cars and airplanes, the increasing familiarity that would help to reduce the fear of nuclear power has not occurred.

Fourth, and finally, fears are exaggerated if the feared stimulus is thought of as unnecessary and/or unpleasant. By contrast, when the feared experience is considered necessary or pleasant, it is rarely feared, regardless of the actual risk involved. Alcohol consumption, particularly when combined with driving, another risky venture, is a good example of this. Even though nuclear power provides about 12 percent of all American electricity, many Americans are convinced that nuclear power is an unnecessary source of

electric power generation. Given this appearance of being unnecessary, the anti-nuclear argument goes, "Why put up with the fear?"

The psychological deck is stacked against nuclear power. All four of these factors work to heighten irrational fears of nuclear power.

To recap, nuclear power is seen by many Americans as posing a "single, big threat" and is, therefore, excessively feared. This fear is reinforced by the media. Nuclear power is seen as controlled by "others" and, therefore, the fear is exaggerated. Nuclear power is unfamiliar and, therefore, the fear persists. Nuclear power is seen as unnecessary and, therefore, the fear is not confronted, but permitted to flourish.

IV. The Potential for Overcoming Fear of Nuclear Power

There are two major lessons from understanding the psychological roots of the fear of nuclear power which have direct applicability to overcoming the fear.

The first is putting the health risk of nuclear power into a realistic, "what is" perspective. It is essential that the discussion of health risks be presented to the public in a clear, realistic way. The dangers of nuclear power need to be understood in relationship to the dangers of other ways of generating electricity and also in relationship to other, more familiar, health risks. Once the

leap is made to "what if" thinking in considering health risks, that leap needs to be clearly labeled and the related "what is" risks need to be similarly explored.

The phenomenon of "what if" thinking must be understood. Those in positions to make decisions for their fellow citizens and to educate and influence the public must be "what is" thinkers. Only then can the risks of nuclear power, and the health hazards of modern life which are truly menacing, be rationally evaluated. While facts alone will not overcome irrational, phobic fears, facts are important. They will reduce the likelihood of fear reactions developing and, once they begin to develop, facts about safety will help the fearful person accurately identify the source of the problem: inside himself and not in the fear-provoking stimulus. Facts also help those around the fearful person identify the problem as irrational fear, thus facilitating effective response to the problem.

Second, and I speak now as a practicing physician, it is important to address the needs of the fearful person. The first step in overcoming any excessive or irrational fear, including fear of nuclear power, is to face the reality that the fear is the problem (not the nuclear power plant) and that the fear is inside the frightened person. This concept may sound simple, but it is difficult because the fearful person attributes his fear to external stimuli -- in this case, a nuclear power plant. I wish that people

who are afraid of nuclear power could visit a nuclear power plant, as I have done. In the course of visits I have made, my own initial fears were reduced by seeing how work-a-day the plants actually are. I also found it reassuring to meet the people who work in nuclear power plants. They appeared to me to be well-trained, "good," and unafraid people. I also enjoyed spending time in the visitors' centers, which most of the nuclear power plants now have. There I learned a good deal about nuclear power and about energy.

Additionally, school children should be educated about nuclear power and the energy problems facing our modern world. This must, however, be a "what is" education. It is the responsibility of our educators to contribute to the development of tomorrow's rational decision-makers, rather than to promote a generation of voters who can only think in a "what if" manner.

V. Conclusions

While nuclear power tends to generate fear, there is nothing unique about the fear itself. The psychological principles involved in this fear, as well as the impact of the media and politicians, are not unique. The major lesson from understanding the widespread public fear of nuclear power is that, as our world changes ever more rapidly, we need to think twice about our innate, automatic fear reactions. We also need to recognize the ways our fears are

wittingly and unwittingly affected by voices from the political arena and from the media. We need to be able to re-focus on the most serious dangers to our health, individually and collectively, and to take sensible actions to reduce those threats.

When we come against fears which are not well-founded on scientifically proven facts, we need to use specific techniques for overcoming these fears by facing them directly. It is especially important that the media and our political leaders become better educated about where risks to health are located so they can help solve these problems, rather than distorting them further, as often happens today. To let our fears, themselves separated from realistic assessments of danger, dominate our actions as individuals or as a nation would be a real tragedy, posing a grave threat to our health, our happiness, and our productivity.

While increased familiarity and knowledge regarding nuclear power may help to reduce unrealistic fears, the encouragement of "what if" thinking about events with a remote probability of occurrence will certainly heighten those fears. Just because an event has a probability of occurrence that is "greater than zero" does not mean people should be fearful. Any event, whether tragic or desirable, has a probability of occurring that is "greater than zero." We must rationally assess the "what is" concerning risk in order to reassure the community that decisions are

being made in a prudent, rather than an irrational manner. Even people who are excessively frightened of nuclear power conduct other aspects of their lives based on "what is" thinking.

Let me turn now to "what if": what if there were an accident at Indian Point that required public protective action? There has never been an accident at a nuclear power plant necessitating a prompt or general public response, a record which speaks well for the nuclear industry and its regulators. Despite the lack of direct data regarding "nuclear" evacuations, I believe that during such an evacuation people would behave responsibly and competently. They did just that (and without the benefit of an evacuation plan) in February 1981, when approximately 3000 people were evacuated in Port Jervis, Orange County, New York, due to river flooding (Ref. 11), and in November 1979, when approximately 250,000 people were evacuated in Mississauga, Ontario, Canada, due to a chemical spill (Ref. 12).

Based on my experience with human behavior, particularly behavior under stress, I believe that elected officials will be cooperative and competent, that school officials and teachers will be sensible and responsible, and that neighbors will be helpful and humane. If this were not the case, we would long ago have ceased trusting the public officials who we know, our personal physicians, our children's teachers, our neighbors, and ourselves.

REFERENCES

1. Nuclear Power Plants in the United States, Atomic Industrial Forum Public Affairs and Information Program, Jan. 1, 1983, at 9; The Nuclear Industry in 1982: Staying the Curse and Swaying the Course, Atomic Industrial Forum News Release, Jan. 12, 1983, at 3.
2. AIF Releases International Survey: France Continues to Dominate Foreign Nuclear Electricity Growth, Atomic Industrial Forum News Release, Mar. 29, 1982, at 3, Attachment at 2-12.
3. Personal Communication from Timothy Smith, Senior Biostatistician, New York State Health Department, Office of Health Statistics, to Morgan Associates, Chartered (Jan. 21, 1983).
4. Burgess, Physical Effects of Crash Being Erased, But Memories Remain, Wash. Post, Jul. 14, 1982, at A13, col. 1; Panel Studying Efficacy of Rescue Efforts, Wash. Post, Jan. 27, 1982, at C5, col. 1.
5. Public Health Service, U.S. Dep't of Health, Education, and Welfare, Pub. No. 79-55071, Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention 111 (1979) (hereinafter Surgeon General's Report).
6. R. Dean & K. Whitaker, Boeing Pub. No. BCS-D009-RD/DM, Fear of Flying--Impact on the U.S. Travel Industry, at i (1980).
7. Iced Wings Eyed in Crash of Jet, Wash. Post, Jan. 15, 1982, at A, col. 5.
8. Surgeon General's Report at 111.
9. Surgeon General's Report at 111.
10. Surgeon General's Report at 125.
11. Rodan, 'It could have been worse,' Port Jervis Union-Gazette, Feb. 13, 1981, at 11, col. 1.
12. Canada's lesson on train derailments, Bus. Wk., Dec. 3, 1979, at 43; 8 Firemen Overcome, Wash. Post, Nov. 16, 1979, at A28, col. 1.

ROBERT L. DUPONT, M. D.
BIOGRAPHICAL SKETCH

Robert L. DuPont, M. D., is a practicing psychiatrist and President of the non-profit Institute for Behavior and Health, Inc. (IBH). As part of his practice of psychiatry, he directs Washington's first phobia treatment program. In addition, he is President of the American Council on Marijuana and contributes to local and national TV, radio, magazines, and newspapers on a variety of health topics.

The American Council on Marijuana is the nation's leading private organization linking scientists to community action programs. It interprets the latest scientific research for the public and offers leadership on marijuana policy. The American Council on Marijuana and Other Psychoactive Drugs was founded in 1977. ACM has offices in New York City and Rockville, Maryland.

Dr. DuPont has a special interest in substance abuse prevention programs in the schools and in the workplace. The Institute for Behavior and Health conducts research and demonstration programs aimed at preventing drug and alcohol abuse, as well as more broadly targeted health promotion efforts.

The Phobia Program of Washington is a structured 20-week program which helps phobic people overcome agoraphobia, fear of flying, fear of driving on major highways, claustrophobia, and other phobias. The program, which was founded in 1977, also includes self-help meetings for former program members, and outreach services for housebound agoraphobics. In May, 1978, Dr. DuPont chaired a Special Session at the American Psychiatric Association's annual meeting in Atlanta on the "Treatment of Phobias." He chaired a similar Special Session at the 1979 APA meeting in Chicago and the 1980 APA meeting in San Francisco. In 1980 he led the second annual National Phobia Conference held in Washington, D. C.

In addition to his work as a health commentator on ABC-TV's Good Morning, America, Dr. DuPont has appeared on many network TV shows, including The Phil Donahue Show, The David Suskind Show, and The Dick Cavett Show. He is a frequent guest talk-show host on WRC-NBC radio in Washington, D. C. He has been quoted in U. S. News and World Report, Time and Newsweek, and has appeared on the evening network news, the Today Show, and many TV documentaries.

Dr. DuPont was the Director of the National Institute on Drug Abuse from its creation in September, 1973, until July, 1978. In June, 1973, he was appointed by the President and confirmed by the Senate to direct the White House Special Action Office for Drug Abuse Prevention, a position he held until the office terminated in June, 1975. As SAODAP Director with a staff of more than 100, he designed and coordinated the entire \$1 billion a year federal drug abuse prevention program.

In his role as Director of the National Institute on Drug Abuse, he directed the Federal Government's major drug abuse treatment, research and prevention effort with a staff of 400 and a budget of \$280 million a year.

From 1970 to 1973, Dr. DuPont served as Administrator of the Narcotics Treatment Administration (NTA) of the District of Columbia Department of

Human Resources. NTA was a comprehensive city-wide multimodality heroin addiction treatment program which treated 15,000 people with a staff of 500 working in 20 facilities during those years.

As a research psychiatrist and Acting Associate Director for Community Services of the District of Columbia Department of Corrections from 1968 to 1970, he directed the city's parole and halfway house programs and developed a pilot narcotics treatment program.

Dr. DuPont has written more than 100 professional articles and one book on a variety of topics in the fields of health promotion, drug abuse prevention, and criminal justice. He holds the faculty positions of Clinical Professor of Psychiatry at Georgetown University Medical School, and Visiting Associate Clinical Professor of Psychiatry at Harvard Medical School.

He is a diplomate of the American Board of Psychiatry and Neurology, a fellow of the American Psychiatric Association, and a member of many professional organizations, including the Academy of Behavioral Medicine Research, the Behavioral Medicine Special Interest Group, the American Public Health Association, the World Psychiatric Association, the Pan American Medical Association, the Medical and Chirurgical Faculty of the State of Maryland, and the Montgomery County Medical Society. Dr. DuPont was Chairman of the Drug Dependence Section of the World Psychiatric Association, from 1974 through 1979.

Dr. DuPont is listed in Who's Who in America and has received honors, including being chosen the Outstanding Young Man in the District of Columbia Government in 1972 by the Downtown Jaycees. In 1973, he was given the Meritorious Service Award by the Mayor of the District of Columbia. He was awarded the highest honor in the U. S. Public Health Service, the Superior Service Award, by the Surgeon General in 1978. He has also been honored by several local and national drug abuse and alcohol abuse prevention organizations.

Born on March 25, 1936, in Toledo, Ohio, he attended public high school in Denver, Colorado; received a B. A. from Emory University in Atlanta, Georgia, in 1958; and an M. D. from Harvard Medical School in Boston, Massachusetts, in 1963. His postgraduate training includes: Medical Intern, Cleveland Metropolitan General Hospital, Western Reserve Medical School (1963-1964); psychiatric resident and teaching fellow, Massachusetts Mental Health Center, Harvard Medical School (1964-1966); and clinical associate, National Institutes of Health (1966-1968).

June 1, 1982

ROBERT L. DUPONT, M. D.

SUPPLEMENTAL BIOGRAPHICAL SKETCH

Material Pertaining to Fears of Nuclear Power:

In 1979, because of his experience with public policy and his expertise in fear, Dr. DuPont was asked by the non-profit Media Institute to review network TV news coverage of nuclear power between 1968 and 1979. This led to publication of the influential monograph, "Nuclear Phobia -- Phobic Thinking About Nuclear Power."

Subsequently, Dr. DuPont visited nuclear power plants at Three Mile Island, and Peach Bottom in Pennsylvania, and Diablo Canyon in California, as well as England, Canada and France. In addition to talking to employees at these nuclear power plants, he interviewed neighbors and county and regional leaders, including physicians and politicians. He has consulted with numerous utilities, public interest groups, medical groups, and government agencies about public reactions to nuclear power.

In October of 1981, Dr. DuPont participated in an international Conference at Ditchley Park in England dealing with the media coverage of energy in five countries: England, France, Germany, the United States and Japan.

His publications on the psychology of nuclear power include the following:

DuPont, R. L.: "Phobic Fear as a Nuclear Health Hazard." The Washington Star, July 20, 1980.

DuPont, R. L.: Nuclear Power -- Phobic Thinking About Nuclear Power. The Media Institute, March, 1980.

DuPont, R. L.: "Nuclear Phobia: Phobic Thinking About Nuclear Power," in Nuclear Power in American Thought, Decisionmakers, Vol. 8, Edison Electric Institute, 23-41, 1981.

DuPont, R. L.: "Fifty Million Frenchmen Have Few Nuclear Fears," Electric Perspectives, Edison Electric Institute, 33-36, Fall, 1981.

DuPont, R. L.: "The Nuclear Power Phobia." Business Week, 14-16, September 7, 1981. (Reprinted, Congressional Record, September 15, 1981.)

DuPont, R. L.: "The Psychology of Phobic Fear of Nuclear Energy," in Phobia: A Comprehensive Summary of Modern Treatments. Edited by Robert L. DuPont, M. D., Brunner/Mazel, 1982.
Edited by Robert L. DuPont, M. D., Brunner/Mazel, 1982.

DuPont, R. L.: "Psychological Trauma and Nuclear Emergency Planning: The Value of Confronting Fears," in Are Current Emergency Planning Requirements Justified, (Workshop Proceedings), Nuclear Safety Analysis Center, presented January 13, 1982.

Congressional Hearing:

Statement of Robert L. DuPont, M. D., before the Committee on Science and Technology, Subcommittee on Energy Research and Production, U. S. House of Representatives, Washington, DC, December 15, 1981.

Unpublished Manuscripts:

DuPont, R. L.: "Understanding Fear of Nuclear Power." Presented at the International Conference of the Atomic Industrial Forum, Inc., November 18, 1980, Washington, DC.

DuPont, R. L.: "Lessons from France: Fears of Nuclear Power." May 4, 1981.

DuPont, R. L.: "Perspectives of Nuclear Risk: The Role of the Media." Presented at the Annual Meeting of the Canadian Nuclear Association, June 9, 1981, Ottawa, Canada.

DuPont, R. L.: "Phobic Fear of Nuclear Energy -- Why Don't the French Have It?" June 12, 1981.

DuPont, R. L.: "The Press Isn't to Blame for Nuclear's Problems!" December 20, 1981.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:
James P. Gleason, Chairman
Frederick J. Shon
Dr. Oscar H. Paris

In the Matter of)	
)	
CONSOLIDATED EDISON COMPANY OF)	Docket Nos.
NEW YORK, INC.)	50-247 SP
(Indian Point, Unit No. 2))	50-286 SP
)	
POWER AUTHORITY OF THE STATE OF)	Jan. 24, 1983
NEW YORK)	
(Indian Point, Unit No. 3))	
)	

CERTIFICATE OF SERVICE

I hereby certify that on the 24th day of January, 1983,
I caused a copy of Power Authority's Testimony of Robert L.
DuPont, M.D., on Commission Question 1 to be served by first
class mail, postage prepaid on the following:

James P. Gleason, Chairman
Administrative Judge
Atomic Safety and Licensing Board
513 Gilmore Drive
Silver Spring, Maryland 20901

Mr. Frederick J. Shon
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Dr. Oscar H. Paris
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Mr. Ernest E. Hill
Administrative Judge
Lawrence Livermore National
Laboratory
University of California
P. O. Box 808, L-123
Livermore, CA 94550

Docketing and Service Branch
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Joan Holt, Project Director
Indian Point Project
New York Public Interest Research
Group
9 Murray Street
New York, New York 10007

Jeffrey M. Blum, Esq.
New York University Law School
423 Vanderbilt Hall
40 Washington Square South
New York, New York 10012

Charles J. Maikish, Esq.
Litigation Division
The Port Authority of New York
and New Jersey
One World Trade Center
New York, New York 10048

Charles M. Pratt, Esq.
Stephen L. Baum, Esq.
Power Authority of the
State of New York
10 Columbus Circle
New York, New York 10019

Janice Moore, Esq.
Counsel for NRC Staff
Office of the Executive
Legal Director
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Brent L. Brandenburg, Esq.
Assistant General Counsel
Consolidated Edison Company
of New York, Inc.
4 Irving Place
New York, New York 10003

Ellyn R. Weiss, Esq.
William S. Jordan, III, Esq.
Harmon and Weiss
1725 I Street, N.W., Suite 506
Washington, D.C. 20006

Charles A. Scheiner, Co-Chairperson
Westchester People's Action
Coalition, Inc.
P.O. Box 488
White Plains, New York 10602

Alan Latman, Esq.
44 Sunset Drive
Croton-On-Hudson, New York 10520

Ezra I. Bialik, Esq.
Steve Leipzig, Esq.
Environmental Protection Bureau
New York State Attorney
General's Office
Two World Trade Center
New York, New York 10047

Alfred B. Del Bello
Westchester County Executive
Westchester County
148 Martine Avenue
White Plains, New York 10601

Andrew S. Rolfe, Esq.
New York State Assembly
Albany, New York 12248

Marc L. Parris, Esq.
Eric Thorsen, Esq.
County Attorney
County of Rockland
11 New Hempstead Road
New City, New York 10956

Phyllis Rodriguez, Spokesperson
Parents Concerned About Indian
Point
P.O. Box 125
Croton-on-Hudson, New York 10520

Renee Schwartz, Esq.
Paul Chessin, Esq.
Laurens R. Schwartz, Esq.
Margaret Oppel, Esq.
Botein, Hays, Sklar and Hertzberg
200 Park Avenue
New York, New York 10166

Honorable Ruth W. Messinger
Member of the Council of the
City of New York
District #4
City Hall
New York, New York 10007

Greater New York Council
on Energy
c/o Dean R. Corren, Director
New York University
26 Stuyvesant Street
New York, New York 10003

Joan Miles
Indian Point Coordinator
New York City Audubon Society
71 West 23rd Street, Suite 1828
New York, New York 10010

Richard M. Hartzman, Esq.
Lorna Salzman
Mid-Atlantic Representative
Friends of the Earth, Inc.
208 West 13th Street
New York, New York 10011

Stanley B. Klimberg, Esq.
General Counsel
New York State Energy Office
2 Rockefeller State Plaza
Albany, New York 12223

Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Atomic Safety and Licensing
Appeal Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Honorable Richard L. Brodsky
Member of the County Legislature
Westchester County
County Office Building
White Plains, New York 10601

Zipporah S. Fleisher
West Branch Conservation
Association
443 Buena Vista Road
New City, New York 10956

Mayor George V. Begany
Village of Buchanan
236 Tate Avenue
Buchanan, New York 10511

Judith Kessler, Coordinator
Rockland Citizens for Safe Energy
300 New Hempstead Road
New City, New York 10956

David H. Pikus, Esq.
Richard F. Czaja, Esq.
Shea & Gould
330 Madison Avenue
New York, New York 10017

Amanda Potterfield, Esq.
Johnson & George
528 Iowa Avenue
Iowa City, Iowa 52240

Ruthanne G. Miller, Esq.
Atomic Safety and
Licensing Board Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Mr. Donald Davidoff
Director, Radiological Emergency
Preparedness Group
Empire State Plaza
Tower Building, Rm. 1750
Albany, New York 12237

Craig Kaplan, Esq.
National Emergency Civil
Liberties Committee
175 Fifth Avenue, Suite 712
New York, New York 10010

Michael D. Diederich, Jr., Esq.
Fitzgerald, Lynch & Diederich
24 Central Drive
Stony Point, New York 10980

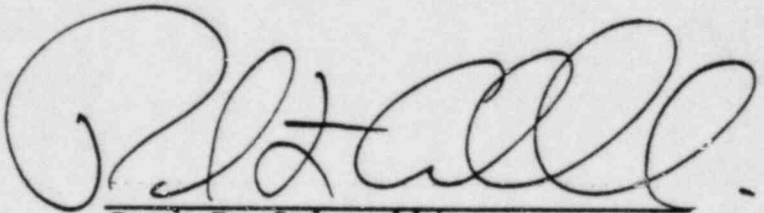
Steven C. Sholly
Union of Concerned Scientists
1346 Connecticut Avenue, N.W.
Suite 1101
Washington, D.C. 20036

Spence W. Perry
Office of General Counsel
Federal Emergency Management Agency
500 C Street, S.W.
Washington, D.C. 20472

Stewart M. Glass
Regional Counsel
Room 1349
Federal Emergency Management Agency
26 Federal Plaza
New York, New York 10278

Melvin Goldberg
Staff Attorney
New York Public Interest
Research Group
9 Murray Street
New York, New York 10007

Jonathan L. Levine, Esq.
P. O. Box 280
New City, New York 10958



Paul F. Colarulli

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:
James P. Gleason, Chairman
Frederick J. Shon
Dr. Oscar H. Paris

DOCKETED
USNRC

'83 JAN 26 10:49

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)

CONSOLIDATED EDISON COMPANY OF)
NEW YORK, INC.)
(Indian Point, Unit No. 2))

POWER AUTHORITY OF THE STATE OF)
NEW YORK)
(Indian Point, Unit No. 3))

Docket Nos.
50-247 SP
50-286 SP

Jan. 4, 1983

CERTIFICATE OF SERVICE

I hereby certify that on the 24th day of January, 1983,
I caused a copy of (1) Licensees' Testimony of Dennis C.
Richardson and Dennis C. Bley on Board Question 1.4, (2)
Licensees' Testimony of Stanley Kaplan on Board Question
1.2, and (3) Licensees' Testimony of Thomas E. Potter on
Board Question 1.3 to be served by first class mail, postage
prepaid on the following:

James P. Gleason, Chairman
Administrative Judge
Atomic Safety and Licensing Board
513 Gilmoure Drive
Silver Spring, Maryland 20901

Mr. Frederick J. Shon
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Dr. Oscar H. Paris
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Mr. Ernest E. Hill
Administrative Judge
Lawrence Livermore National
Laboratory
University of California
P. O. Box 808, L-123
Livermore, CA 94550

Docketing and Service Branch
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Joan Holt, Project Director
Indian Point Project
New York Public Interest Research
Group
9 Murray Street
New York, New York 10007

Jeffrey M. Blum, Esq.
New York University Law School
423 Vanderbilt Hall
40 Washington Square South
New York, New York 10012

Charles J. Maikish, Esq.
Litigation Division
The Port Authority of New York
and New Jersey
One World Trade Center
New York, New York 10048

Charles M. Pratt, Esq.
Stephen L. Baum, Esq.
Power Authority of the
State of New York
10 Columbus Circle
New York, New York 10019

Janice Moore, Esq.
Counsel for NRC Staff
Office of the Executive
Legal Director
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Brent L. Brandenburg, Esq.
Assistant General Counsel
Consolidated Edison Company
of New York, Inc.
4 Irving Place
New York, New York 10003

Ellyn R. Weiss, Esq.
William S. Jordan, III, Esq.
Harmon and Weiss
1725 I Street, N.W., Suite 506
Washington, D.C. 20006

Charles A. Scheiner, Co-Chairperson
Westchester People's Action
Coalition, Inc.
P.O. Box 488
White Plains, New York 10602

Alan Latman, Esq.
44 Sunset Drive
Croton-On-Hudson, New York 10520

Ezra I. Bialik, Esq.
Steve Leipzig, Esq.
Environmental Protection Bureau
New York State Attorney
General's Office
Two World Trade Center
New York, New York 10047

Alfred B. Del Bello
Westchester County Executive
Westchester County
148 Martine Avenue
White Plains, New York 10601

Andrew S. Roffe, Esq.
New York State Assembly
Albany, New York 12248

Marc L. Parris, Esq.
Eric Thomsen, Esq.
County Attorney
County of Rockland
11 New Hempstead Road
New City, New York 10956

Phyllis Rodriguez, Spokesperson
Parents Concerned About Indian
Point
P.O. Box 125
Croton-on-Hudson, New York 10520

Renee Schwartz, Esq.
Paul Chessin, Esq.
Laurens R. Schwartz, Esq.
Margaret Oppel, Esq.
Botein, Hays, Sklar and Hertzberg
200 Park Avenue
New York, New York 10166

Honorable Ruth W. Messinger
Member of the Council of the
City of New York
District #4
City Hall
New York, New York 10007

Greater New York Council
on Energy
c/o Dean R. Corren, Director
New York University
26 Stuyvesant Street
New York, New York 10003

Joan Miles
Indian Point Coordinator
New York City Audubon Society
71 West 23rd Street, Suite 1828
New York, New York 10010

Richard M. Kartzman, Esq.
Lorna Salzman
Mid-Atlantic Representative
Friends of the Earth, Inc.
208 West 13th Street
New York, New York 10011

Stanley B. Klimberg, Esq.
General Counsel
New York State Energy Office
2 Rockefeller State Plaza
Albany, New York 12223

Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Atomic Safety and Licensing
Appeal Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Honorable Richard L. Brodsky
Member of the County Legislature
Westchester County
County Office Building
White Plains, New York 10601

Zipporah S. Fleisher
West Branch Conservation
Association
443 Buena Vista Road
New City, New York 10956

Mayor George V. Begany
Village of Buchanan
236 Tate Avenue
Buchanan, New York 10511

Judith Kessler, Coordinator
Rockland Citizens for Safe Energy
300 New Hempstead Road
New City, New York 10956

David H. Pikus, Esq.
Richard F. Czaja, Esq.
Shea & Gould
330 Madison Avenue
New York, New York 10017

Amanda Potterfield, Esq.
Johnson & George
528 Iowa Avenue
Iowa City, Iowa 52240

Ruthanne G. Miller, Esq.
Atomic Safety and
Licensing Board Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Mr. Donald Davidoff
Director, Radiological Emergency
Preparedness Group
Empire State Plaza
Tower Building, Rm. 1750
Albany, New York 12237

Craig Kaplan, Esq.
National Emergency Civil
Liberties Committee
175 Fifth Avenue, Suite 713
New York, New York 10010

Michael D. Diederich, Jr., Esq.
Fitzgerald, Lynch & Diederich
24 Central Drive
Stony Point, New York 10980

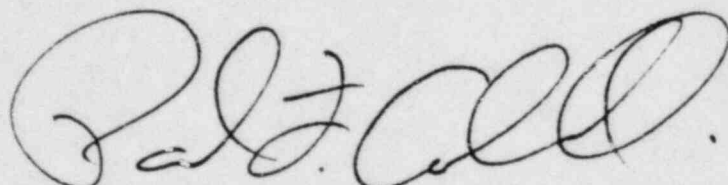
Steven C. Sholly
Union of Concerned Scientists
1346 Connecticut Avenue, N.W.
Suite 1101
Washington, D.C. 20036

Spence W. Perry
Office of General Counsel
Federal Emergency Management Agency
500 C Street, S.W.
Washington, D.C. 20472

Stewart M. Glass
Regional Counsel
Room 1349
Federal Emergency Management Agency
26 Federal Plaza
New York, New York 10278

Melvin Goldberg
Staff Attorney
New York Public Interest
Research Group
9 Murray Street
New York, New York 10007

Jonathan L. Levine, Esq.
P. O. Box 280
New City, New York 10958



Paul F. Colarulli