

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD
Before Administrative Judges
Louis J. Carter, Chair
Frederick J. Shon
Dr. Oscar H. Paris

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In the Matter of:	:	Docket Nos.
CONSOLIDATED EDISON COMPANY OF NEW YORK	:	50-247 SP
Inc. (Indian Point, Unit No. 2),	:	50-286 SP
	:	
POWER AUTHORITY OF THE STATE OF NEW YORK	:	July 23, 1982
(Indian Point, Unit No. 3)	:	

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Testimony Submitted on Behalf of
"New York City Council" Intervenors

By

DR. LEONARD SOLON

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Statement to Atomic Safety and Licensing Board of the U.S.
Nuclear Regulatory Commission

Re: Continued Operation of Indian Point
Nuclear Reactor Electric Power
Generating Stations in Buchanan,
Westchester County, New York

Dr. Leonard R. Solon
Director, Bureau for Radiation Control
N.Y.C. Department of Health

July 23, 1982

Biographical Summary for:

Dr. Leonard R. Solon, Director
Bureau for Radiation Control
New York City Department of Health
65 Worth Street
New York, New York 10013

Dr. Solon received his bachelor's degree from Hamilton College in 1947, his Master of Science degree in physics from Rutgers University in 1949, and his Ph.D. in radiological health from New York University in 1960

He was elected to Phi Beta Kappa at Hamilton College. His doctoral dissertation at New York University was on the dosimetry of natural environmental ionizing radiation. In addition to his present position as Director of the New York City Health Department Bureau for Radiation Control, he currently holds an appointment as adjunct associate professor in the Department of Environmental Medicine of the New York University Medical Center where he organized and taught graduate courses in radiological health, radiation hygiene measurements, and the health effects of non-ionizing radiation.

He is a co-patentee of the laser photocoagulator employed in the treatment of ocular disorders such as detached retina. He is also a co-inventor covered by a United States patent of a method of powering laser devices using nuclear energy sources.

Among his prior positions, Dr. Solon was Assistant Chief and then Chief of the Radiation Branch of the United States Atomic Energy Commission Health and Safety Laboratory (now the Department of Energy Environmental Measurements Laboratory). He was also a member of the Technical Consultants Panel of the Atomic Energy Commission, Division of Military Application.

His professional organizations include membership in the Health Physics Society, the American Nuclear Society, the American Association for the Advancement of Science, the American Physical Society, the New York Academy of Sciences, and the Conference of Radiation Control Program Directors.

He is certified as a health physicist with certification by the American Board of Health Physics and is listed in American Men and Women of Science.

Dr. Solon was born in White Plains, New York. He attended New York City public schools including the Bronx High School of Science from which he graduated prior to entering college.

During World War Two, Dr. Solon served in a heavy weapons company with the 87th Infantry Division in Europe where he was awarded the Combat Infantryman Badge and received battle stars for the Ardennes, Central Europe, and the Rhineland.

Dr. Solon was married to Charlotte Rothman of New York in 1946 at the conclusion of his military service. They have three children, Miriam, an editor, lawyer and graduate of Cardozo School of Law of Yeshiva University in New York City; Matthew, an artist and teacher, who received his Master of Fine Arts degree from the University of Arizona, and Emily presently an art student at Parsons School of Design.

Dr. Solon shares his scientific interests with his new grandson, Idan Samuel Solon, born in January, 1981.

Introduction

I am Dr. Leonard R. Solon, Director of the Bureau for Radiation Control of the City of New York Department of Health. My comments are at the invitation of twenty-three members of the New York City Council.

Before furnishing my observations to the Nuclear Regulatory Commission's Atomic Safety and Licensing Board I would want to make a few preliminary remarks and express a qualifying caveat.

Though I am here with the knowledge and authorization of Dr. David J. Sencer, Commissioner of Health of the City of New York, the opinions I express are my personal scientific perceptions and evaluations. They do not represent the point of view of the New York City Department of Health nor that the New York City Board of Health which, to my knowledge has not taken an official position in the matter of the Indian Point reactors. However the involvement, concern, and interest of the Department and Board has been long standing.

As early as August 12, 1976 the Department, at the direction of the Commissioner of Health and the Board of Health scheduled and arranged for a detailed scientific public hearing before the Board on the health implications of the operation of the Indian Point nuclear reactors in Buchanan, Westchester County, New York.

One brief comment on my own personal orientation in this matter. I do not propose to address in my remarks any overall evaluation of the general exercise of the nuclear power option with respect to confronting the City, State, or Nation's energy needs. However members of the Atomic Safety and Licensing Board and the concerned public are entitled to know as our youthful contemporaries so eloquently phrase it "where I am coming from."

In my personal judgment a defensible case has been made for the utilization of nuclear reactors for electric power generation to meet, along

with other energy sources, present requirements for the United States and New York State. From the occupational and public health and safety viewpoint, a supportable position can be advanced generally favorable in the nuclear option as contrasted with fossil fuel - oil and coal fired- power plants. For reasons which I have published elsewhere, I am hopeful that the nuclear fission option with which I think we are compelled to live for perhaps thirty years, will be universally replaced with superior advanced technologies such as laser-induced fusion or solar power. However that is a subject for another day and another forum.

On Indian Point

Today's question is not the generic merits of the nuclear power option. The very serious matter upon which we are focussing attention are the specific public health questions and risk-benefit constraints associated with continued operation of Consolidated Edison's Indian Point-2 and Power Authority of the State of New York's Indian Point-3.

After careful study and consideration of the total complex of decisive parameters, it is my scientific judgment that the continued operation of the Indian Point nuclear reactors can no longer be justified in terms of the potential danger to public health. The risk-benefit equation is weighted significantly unfavorably in terms of hazards and I urge that the Nuclear Regulatory Commission operating licenses for the Indian Point nuclear reactors be rescinded as soon as possible.

The principal practical parameter that must be taken into account and for which appropriate accommodation is required is the 20% of required electric power now supplied to the City of New York metropolitan area by the Indian Point generating stations. However in the public health balance this loss of generating power can no longer be regarded as preemptive. I will summarize my personal scientific perceptions for urging an early shutdown of the Indian Point reactors. In the aggregate, the collective reasons are so fundamental that one cannot anticipate adequate corrective measures to warrant reinstituting an operational license after its recommended cancellation.

Location of Site and Population Density.

The Indian Point reactors are located on the east bank of the Hudson River 24 miles from the New York City northern boundary in the borough of the Bronx.

Within a 50-mile radius of the complex there is a densely-populated area encompassing 17 million people in the States of New York, New Jersey, Connecticut and Pennsylvania. Very nearly all of the 8 million residents of New York City including all of Manhattan, Brooklyn, Bronx, Queens, and most of Staten Island fall within this 50-mile radius.

There is absolutely no doubt that the present site of these reactors, the progenitor of which, the now permanently shut-down Indian Point-1, which began commercial operation in 1962, would be regarded as utterly unsuitable by today's siting standards for nuclear power generating plants. It can be validly argued perhaps that in 1973, when Indian Point-2, or much less validly in 1976 when Indian Point-3 had its initial startup, there was insufficient siting information available to reach decisions with regard to the adequacy of the Indian Point location.

Seismic Potential of Ramapo Fault

Though it is well known to the Atomic Safety and Licensing Board, since it was^a subject addressed by them in their decision of October 12, 1977, it is not generally known even in the scientific community, that the first Indian Point nuclear plant did not meet the NRC design standard for seismic resistance to earthquakes of 0.15g ground acceleration.

The geological Ramapo fault complex is under the Hudson River 3000 feet west of the Indian Point site and though adjudged not a capable fault under

Appendix A 10 CFR Part 100, Seismic and Geologic Siting Criteria for Nuclear Power Plants, it has been incompletely evaluated with respect to earthquake hazard according to the detailed studies of Aggarwal, and Sykes at the Lamont-Doherty Observatory of Columbia University. Whether the design of Indian Point-2 or Indian Point-3 to sustain a Modified Mercalli Intensity VII earthquake shock (which I am advised is roughly equivalent to a Richter Magnitude 5.5) is sufficient for the Buchanan location is still an unresolved question.

Thyroid Blocking Agents

Despite the incredible recommendation in the New York State Radiological Emergency Preparedness Plan (P.III-55) against the use of potassium iodide as a protective preventive therapy for a radioactive iodine release in a nuclear accident, most of us who have considered the problem in serious scientific depth share the view that potassium iodide should be stockpiled and immediately accessible. Unfortunately the New York State recommendation, reinforced by the scientifically indefensible position of the New York Academy of Medicine in a similar communication last year of its Committee on Public Health on this matter, means that the 17 million people within 50 miles of Indian Point have hanging over their heads indefinitely the Damocletian sword of thyroid malignancy as long as Indian Point-2 and Indian Point-3 remain operating. As a physicist, I am not reassured by the observation of some of my medical colleagues that thyroid cancer is not the worst of cancers. If it develops it can probably be detected and diagnosed before metastasis and the matter can be readily handled by surgical excision of the thyroid. However a medical public health resident of the Health Department and myself published in the October 1981 Bulletin of the Atomic Scientists a public health calculation which puts the matter in

perspective. If the 8 million residents of New York City were exposed to an average of 10 rem per person during a nuclear accident about 7000 cases of thyroid cancer and 20,000 cases of abnormal non-malignant nodules could occur in the first 20 years. If the average person lived 40 years after the accident, there would be 14,000 cases of thyroid cancer and 26,000 persons with benign nodules.

In medical practice an extensive series of tests would be required to distinguish between a cancerous and non-cancerous lesion. The former of course, would have to be removed by a surgical thyroidectomy.

Using 1979 dollars the projected care for New York City residents alone after a serious nuclear release including radioactive iodine-131 and iodine-133 would be about \$9.6 billion for outpatient prevention and follow-up, \$128 million for removal of 14,000 cancerous nodules and \$163 million dollars for removal of 26,000 benign nodules.

Members of the Atomic Safety and Licensing Board certainly know and the informed citizens of New York State and New York City should be made aware that if Buchanan, New York was in southeast Tennessee and Indian Point was the TVA Sequoyah nuclear plant, the residents of Buchanan would have available in their homes protective blocking doses of potassium iodide. Why the Tennessee Department of Public Health has taken this manifestly warranted important step which is being denied our neighbors in the Town of Cortlandt deserves scientific and regulatory agency attention.

General Public Health Problems

However, the overall problem would not be ^{decisively} ameliorated even if potassium iodide were made accessible to people in the 10-mile radioactive plume exposure pathway or the 50-mile ingestion exposure pathway.

The common sense scientific fact is that having more than 8 percent of the United States population at public health risk from the unacceptable location of the Indian Point nuclear generating complex cannot be justified in terms of current knowledge.

It is proper for the Atomic Safety and Licensing Board to be involved and concerned in matters such as the mathematical relationship between radiation induced cancer and radiation dose from a nuclear accident. Whether the appropriate equation is linear, quadratic, linear-quadratic or something else or whether or not there is a threshold for malignancy are matters of profound scientific concern and interest and would influence many long-term decisions of regulatory agencies concerned with all aspects of radiological health and safety. However, a parameter upon which I think we can all agree is that though one radioactive induced cancer in our population is undesirable and if possible should be avoided --10,000 cancers are a disaster.

The population at risk in terms of Indian Point is simply too large to allow continued operation of these nuclear plants.

In the coordinate system of 17 million men, women, and children within 50 miles, it is evident in terms of the latitude of many uncertainties, that the effectiveness of sheltering, evacuating, radioactive decontamination, and medical treatment following a major category nuclear accident are probably going to be inadequate.

It is in the primary health and safety interest of our people -- and paradoxical as it may seem - even in continued sensible exercise of the nuclear option itself in confronting American energy needs - that the operating licenses of Indian Point-2 and Indian Point-3 be permanently rescinded.

Thank you for your kind attention.

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