Committee To End Radiological Hazards
Box 148, 150 Christopher Street
New York, New York 10014 (GR 7-5935)

THE TIME-BOMB AT INDIAN POINT

not sent DRR
see preceding ltr
& attached note

By Mary Hays Weik

Secretary to the Committee

"Any radioactivity . . may be highly dangerous, especially for children whose bones are being formed . . Too many industrial enterprises . . behave as if they had a right to pollute (our) waters at will . . It's high time we . . shifted the burden of proof from the poisoned to the poisoners. It is for them to show cause why they should ever have been allowed to foul our water in the first place, and why they should not be compelled to stop doing it any more. ."

Editorial in Maclean's Magazine, Canada

Statement prepared for the Sept 14,1966
AEC Public Hearing at Buchanan, New York
on a Construction Permit for a second
nuclear reactor at Consolidated Edison's
Indian Point Power Plant on the Hudson :

There is always a point in every campaign - in war, politics, or industry - in which the basic issues are highlighted and made clear: always a classic, decisive case in every legal impasse. The proposed addition to the Indian Point atomic plant - close to one of the world's most populous metropolitan areas - which would give the plant a total capacity larger than any existing nuclear power plant in America, may prove to be that classic case where atomic development is concerned.

A pioneer project of its size, built by the world's largest private electric utility, Consolidated Edison of New York, and located in one of the world's wealthiest urban community areas - New York's Westchester County - the 255-megawatt (million watt) Indian Point plant was noteworthy from the start. Moreover, the site chosen for it was on the bank of one of America's noblest rivers, the historic Hudson, whose waters would receive and be contaminated by a constant vast discharge of the giant reactor's "low-level" radioactive wastes.

The story of Indian Point really began in a Washington D.C. suburb on Dec.7/61 - where, at a small public hearing at the Germantown, Maryland headquarters of the U.S. Atomic Energy Commission, a young Brooklyn,NY science teacher, Guy Torre, made the only opposing statement in the people's behalf, warning of the serious hazards inherent in such a project. Although reporters from every press service were present, only one New York paper, the NY Herald-Tribune, carried a brief mention of Torre's appearance. Soon after, an appeal based on his stand was issued to a list of America's leading scientists, but not one of the scientists contacted came forth to rally in Torre's public support.

I read and was impressed by Torre's statement, "The Peaceful Misuse of Atomic Energy." As a result, I later attended a private meeting called in Westchester at White Plains, to consider a local protest against the Indian Point project. However, since most of the citizens present felt that a well-known figure should head the protest - and no such notable could be found who would undertake the job - the meeting produced no action. Utility public relations and friendly local media quieted any public fears, and in August 1962 the Indian Point plant went into operation.

Just before Christmas in '65 (the same busy holiday season chosen in 1962 by Consolidated Edison to launch its unsuccessful drive to set up another such giant nuclear plant, the "Ravenswood," at the heart of New York City), plans were unveiled for the addition of a second, much larger reactor at Indian Point, of 873 megawatts, which would raise the capacity of the plant (and expand its radioactive wastes and hazards) to 4 times its present size: a total of 1,143 electric megawatts. The announcement came at a crucial time: when a sudden drive had been launched on a country-wide front (sparked by last summer's extension by Congress of the "Price-Anderson Act",to limit company liability to the public for any serious reactor accident which might occur) for a whole "new wave" of enormous nuclear power reactors - whatever their effects might prove to be, in catastrophic accident or lasting widespread damage to their environment. The Indian Point project was one of the first of this "new wave" of plant proposals. Since the 1965 extension of the Price-Anderson Act - clearing the field for the utilities of any undue risk of accident liability until at least 1977 -

plans for more than 30 of these enormous new plants, from 400 to 2,200 electric megawatt capacity, have been set in motion in various parts of our country.

In 1966, a new and significant hazard - a hazard which will inevitably occur wherever such reactors are built - was added to those already inherent in the Indian Point plant. A decision was made by the City of New York to open a pumping station at Beacon, N.Y. to draw drinking water for New York citizens from an area of the Hudson River within the reactor's radius of contamination.

The Record

The Indian Point plant, with its original 255-megawatt reactor (later raised to 270-meg.) has now been operating for more than 4 years. This experience is available for the record. It deserves thoughtful consideration in the light of the company's present desire to add a second reactor to the plant three times the present one's size.

To obtain a reasonable estimate of the proposed new plant's desirability, it must be carefully assessed, with this record in view, on three important points - assisted by published testimony by scientific and technical experts in government and private employ, and by documented facts available for reference:

I - Efficiency and dependability of performance

II - Potential hazards to the public from its operation

III- Environmental effects - on water, air, soil, and vegetation, and consequently on the populations served by it.

I - Efficiency and Dependability of Performance

Fortunately, we have the printed record of a substantial period of the Indian Point plant's operation, and of other large-scale U.S. nuclear plants, as presented in the testimony of an American engineer of character and standing, Mr. Adolph J. Ackerman of Madison, Wisconsin, and published in the U.S. government record of the Joint Congressional Committee On Atomic Energy hearing of June 22-24/65 in Washington on the proposed extension of the Price-Anderson Act.

The cost record of these plants, as revealed in the Ackerman testimony, is most illuminating. Original estimates on reactor costs are shown to have been wildly off-range. The final costs of nearly every such project have been far above the first "selling" estimate. Already in 1964, Mr. Ackerman states, the Indian Point plant, estimated to cost $55 million, and running at only 26% capacity, had cost its builders $134 million (which may account for some of the rate rises suffered by Con-Ed's customers in recent years!). . Detroit's Fermi reactor, originally estimated at $62 million, eventually doubled its cost to $120 million, and may be abandoned before long. . The Hallam, Nebraska plant, estimated at $67 million, ran up a final cost of $84 million, and was finally dismantled before it had hardly run. . The atomic freighter SAVANNAH's estimated cost of $50 million eventually became $80 million. .

What was the actual performance record of these nuclear plants, which have already cost the taxpayer such extravagant sums and for which he has been promised such effortless and trouble-free results? Here is the "outage" (out of operation) record of the Indian Point plant from March/62, when fuel loading was to begin, through its startup in August/62 to Sept/64:

March-- May/62	Fuel loading delayed 2 months for mechanical modifications
Nov -- Dec/62	Six weeks outage to correct piping
June 1963	Two weeks outage for modifications
Aug -- Sep/63	Six weeks outage for repairs inside containment vessel
October 1963	Five weeks more of same work
November 1963	Two weeks outage to repair steam line
Jan -- Jun/64	Shut down for fuel inspection & to install liner in concrete canal
September 1964	Shut down for 7 weeks to correct leaks in boiler tubes and coolant pump
(Fall/65-Spg/66	Shut down for many months for a fuel changeover: - Reported in New York Times: MHW)

In other words, in the 48 months from Spring/62 to Spring/66, the Indian Point reactor was shut down for a total period of 20 months!

That the same performance record can be found in the record of every other large-scale nuclear plant is not to be wondered at; for all these plants are admitted, even by the AEC, to be still in an experimental stage, with many of their problems, mechanical and metallurgical, still unsolved, and their actions under certain conditions often unpredictable. In 1962, eight years after Congress had initiated the AEC's civilian reactor program, when 11 government-owned reactors were already functioning, along with 12 AEC-shared public and cooperative plants and 7 privately owned plants - including the Indian Point, Chicago's Dresden, and the Rowe,Mass. Yankee - an AEC report to Congress stated: "All 30 facilities are considered as experimental or developmental plants . . "

The record of the Yankee plant at Rowe, Mass. is typical. Cited as a prime example of nuclear plant efficiency and economy of operation, the recipient of U.S. and international awards for its "high degree of reliability," and the publicized scene of many visits from delegations of foreign nuclear experts, the Yankee plant was actually shut down, by repairs and "redesigning," for a total of 8 months of the 2 ½ year period from May/62 to Sept/64.

The Elk River, Minnesota plant, a frustrating 4 years late in its startup, was shut down for a total of 7 months in the little over a year from Aug/63 to Nov/64. . Repairs and alterations to the Dresden, just south of Chicago - called by its owner, Commonwealth Edison, "more reliable than any other machine we have" - was shut down for a total of 15 months in the 3 ½ years from Nov/60 to June/64.

Nebraska's ill-fated Hallam plant, started a year behind schedule, was in constant trouble with its experimental reactor, out of action a total of 15 months in its first 3 ½ years; and was eventually given up as a white elephant, to be painfully dismantled and carted away for burial in a highly hazardous and expensive operation. By that time, federal taxpayers had lost, through AEC contributions to the Hallam's builders, $63 million - plus a farewell bonus of $5.7 million awarded the sponsoring utility for its "cooperation." That the Nebraska press observed a tactful silence on the whole fiasco was hardly surprising,since one of the prime contractors of the Hallam plant,Peter Kiewit,was also owner of Nebraska's leading newspaper, the Omaha World-Herald.

Near Detroit, the fabulous Fermi "breeder" plant (target of a long legal fight by UAW and other Detroit unions, which under the able leadership of AFL-CIO's Leo Goodman, carried their opposition as far as the US Supreme Court), a project planned to "pay its way" by earning by 1970 $43.4 million from the sale of steam and nearly $50 million from reactor-produced plutonium, was found in July/66 to have produced only $303,000 worth of electricity on its $120 million investment - and not one gram of plutonium! A Detroit Free Press feature story last summer on the Fermi reactor stated: "A conventional boiler nearby can make 10 times the amount of electricity at a fraction of the cost." A scientist at Argonne National Laboratory in Chicago frankly labeled the Fermi plant "a bust." There is a substantial chance, says the

Free Press story, that the Fermi may be closed down for good within the next two years, when "its radioactive elements will be buried, for safety's sake, in a remote nuclear grave." 5

II - Potential Hazards To the Public

Atomic development has taken strange paths since 1946, when the Atomic Energy Commission was first set up as a top civilian control board to protect the people's health and safety from abuses which might arise. Since then, this laudable purpose has become more and more obscured. For in the rush to draw quick profits from the new atomic industry, the safety of the people who would live around such establishments has become a secondary and neglected matter.

At the first International Conference for "Atoms For Peace" held at Geneva in 1955, careful standards were set up for the siting of future plants. Not much concern was yet being felt about the disposal of reactor wastes, but because of the recognized hazard of serious accidents, of dangerous gamma radiation, and of certain escaping radioactive gases - many of which, even today, cannot be contained by any filter - strict regulations were outlined by a leading scientist present, Sir John Cockcroft, head of Britain's pioneer Harwell Atomic Research Center, for surrounding every such plant, to a radius of 30 kilometers (about 18 miles), with an area containing no person or habitation.

As the years went on, the pressure to build atomic plants closer to settled districts - and easier profits - became stronger; as more and more uranium became available for fuel, and speculation in this field increased. Safety routines were set up and intricate new mechanical and electrical controls and steel-and-concrete shields were installed to increase protection. Officials in Britain, Canada, and the United States proclaimed their reactors' "complete safety." . . But some scientists warned that the record could not continue. G.Rogers McCullough, then chairman of the AEC's "Advisory Committee On Reactor Safeguards," with Mark Mills and Edward Teller of the University of California, wrote: "Absolute safety (of reactors) is not possible. . The operation of nuclear reactors appears safe . . It is however impossible to conduct extensive operations over a long time without occasional occurrences of mistakes. We have been exceedingly lucky so far that nobody has yet been killed by a runaway reactor. It is not possible to count on the continuation of such good luck. With all the inherent safeguards that can be put into a reactor, there is still no foolproof system." (*)

Others felt much the same. In March 1957 a group of American nuclear experts, at the request of Congress, prepared a careful estimate of the potential hazards inherent in a major atomic power plant - an historic document titled "Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Power Plants," destined to become known to specialists in the field (certainly, not to the general public) as the Brookhaven Report, notable because it soon disappeared from public view by becoming "unavailable" from Government printing offices. This report flatly estimated that the following events would result from a "maximum accident" in a high-population area under adverse weather conditions to a 500 thermal meg. reactor (about 150 electric meg: then regarded as a top-size reactor):

> Killed - 3,400; Injured - up to 43,000; Persons Evacuated - 460,000; Agricultural Area Contaminated - 10,000 to 150,000 sq. miles; Property Damage - to $7 Billion.

This estimate, which profoundly shocked the laymen who read it, was tempered by a Committee statement in a prefacing letter, that "We are happy to report that the experts all agree that the chances that major accidents might occur are exceedingly small."

A few months later, in Oct/57, a startling accident did occur, at Britain's great Windscale plant in northwest England, when 3 tons of fission products went out of control in a fire that sent highly toxic clouds of radioactive wastes out of the stacks,

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* (Post-Hearing Note: Dr. McCullough appeared as a consultant & witness for Consol. Edison at the AEC Hearing, Sep/66, & endorsed the "safety" of the 2nd Indian Point reactor.)

through the filters, to spread over most of the United Kingdom and much of Western Europe. In at least five countries, heavy fallout of Iodine-131 sent radioactive levels to disturbing heights.

In Canada, seven months later, in May 1958, another serious accident occurred at the Chalk River, Ontario plant of Canada's Atomic Energy authority, which took 600 men more than 2 months to clean up the resulting havoc.

And in the United States, in January/61 at the big government reactor-testing center at Arco, Idaho, a sudden (and still unexplained) accident to a small reactor of 200 kw (the original 255-megawatt Indian Point reactor was more than a thousand times its size) wrecked the containment building and killed 3 men.

Major accidents, therefore, do occur - although their occurrence is given little publicity in the general press.

Today, the proportions of the reactors on which the Brookhaven Report's figures were based - regarded as large-scale then - have been vastly enlarged. The cited capacity of 150 el. megawatts has now, under the protection of the Price-Anderson Liability Limitation Act, been expanded to 800, 1,000, 1,500, and even (in TVA plans for Brown's Ferry, Ala.)to 2,200 Mwe--with corresponding expansion of public hazards.

The Brookhaven estimates still stand as a yardstick. In a letter of June 18/65 to Chairman Holifield of the Jt. Comm. on Atomic Energy who had asked "whether developments have led to any significant changes in the 1957 Brookhaven Report of accident consequences," Dr. Glenn Seaborg, AEC Chairman, wrote: "Reactors today are much larger than those in prospect in the 1957 study, their fuel cycles are longer and their fission product inventories are larger. Therefore . . the theoretically calculated damages would not be less and under some circumstances would be substantially more than the consequences reported in the (Brookhaven) study."

It is interesting to note that a new qualifying phrase has recently crept into AEC Safety Board evaluations of nuclear project proposals. The standard phrase of approval formerly used for all such projects accepted was that they presented "no undue hazard to the health and safety of the public." The new term for today's crop of gargantuan new reactors is a shade more cautious: we are now informed that there is "reasonable assurance" of their safety.

Today AEC officials, even with the best of intentions, find themselves in a painful dilemma, given the responsibility of guarding the safety of their highly hazardous projects (which Supreme Court justices Black and Douglas, in their famous June/61 minority report on the unions' frustrated Fermi appeal, called "the most awesome, the most deadly, the most dangerous process that man has ever conceived") - and at the same time, of encouraging the growth of the American atomic industry. With one hand they must allay any public fears of atomic hazards; and with the other, as scientists of knowledge and standing, they cannot help but point out some dangers. "We are confident that accidents of greater severity than (is covered by available insurance) will not happen," AEC Commissioner Palfrey assured the 1965 Price-Anderson hearings. "We would not authorize or license any plant to operate if we believed that its operation might result in such an accident. ." Then he added: "Our experience however has not been so extensive, and the technology has not yet sufficiently developed, that we can deny the theoretical possibility of such an accident."

As to the reactors' builders, the following dialogue at the Price-Anderson hearings between Congressman Price and Francis E. Drake, vice-president of Rochester Gas and Electric (now building a large new nuclear plant on Lake Ontario), shows how much faith utility officials have in the safety of their own projects:

> MR. DRAKE: "We have . . been interested in building a nuclear power-plant on our system . . A significant factor in our decision will be the availability of combined nuclear liability insurance and governmental indemnification provided under the Price-Anderson system" (a "no recourse" limitation of total liability of

$60 million from pr[illegible]te insurance companies & $500 million from the US government - for damages which the 1957 report said might exceed $7 billion! - MHW). "Since the Price-Anderson Act went into effect in 1957 no reactor accident has caused off-site harm . . the nuclear industry (has) enormously increased (its) knowledge of how to . . assure the health and safety of the public. . Today persons both in and out of Gov't share a firm confidence that no major accident will occur in nuclear power plants . ."

REP. PRICE: "(Would) your company be willing to proceed with construction of a nuclear power plant if the Price-Anderson (limitation of liability) were terminated?"

MR. DRAKE: "No, I don't believe we would . . "

AEC reports on "engineered safeguards," which are made the argument for moving atomic plants closer to populous centers, are not too reassuring to one who might live close to such a plant. In a government study on "Containment and Confinement," describing as the "sequential barriers" designed to prevent the escape of fission products during an accident: first, the fuel; second, the fuel cladding; third, the primary cooling system; and fourth, the plant containment system - it is stated that failure of the first three barriers "must usually be considered credible." This leaves the fourth (plant containment), which at the end of the study is described as being "greatly dependent on administration control" and if "competently designed, constructed, maintained and tested" (a most extensive "if"!-MHW) "considered to be effective."

Meanwhile, the rush continues to join the throng of utilities now planning enormous new plants. Busy plans are being made to cut construction and maintenance costs by producing in the reactor sizable quantities of plutonium for defense use and foreign trade. Nothing is said about the vastly increased accident potential which accompanies such an increase in reactor size - accidents which could destroy and make uninhabitable for a long time whole regions of our country; which in the case of the new Indian Point reactor, could expand the chance of nightmare catastrophe to a radius including not only the Hudson Valley of Westchester but all of metropolitan New York, Connecticut, and New Jersey!

The two new additions to the Dresden nuclear plant at Morris, Ill., just south of Chicago - now to total 1,638 el. megawatts - which will be considered for a construct-permit at another AEC hearing at Morris on Sept.27th, are a typical example. It seems incredible that hardly a voice of protest has been raised against this gigantic project - where the "maximum accident" conceived by the Brookhaven Report, should it happen to the completed group of giant Dresden reactors, could ruin, not a township, county or state, but destroy and make sterile the whole agricultural heartland of America.

In their book "Our Nuclear Future," scientists Edward Teller and R.L. Latter wrote that while a nuclear reactor would not explode like an atomic bomb, "some reactors if improperly handled may explode (with the violence of about the same weight of high explosive)." They added: "A reactor accident could become exceedingly dangerous . . (and) endanger people at a considerable distance. . downwind. . If a (300-megawatt) reactor operates for half a year and then explodes and releases its radioactive content into the atmosphere, its radioactivity will be comparable to that of a hydrogen bomb. In one important respect such an accident would be worse than a hydrogen explosion (which) lifts most of its radioactive products to a high altitude (where) the poisonous acitivity gets dispersed and diluted before it descends. The activity from a reactor on the other hand will remain close to the ground and might endanger the lives of the people in an area of hundreds of square miles. It will contaminate an even greater territory . . . We must be prepared that sooner or later accidents will occur. . ."

Finally, we remind the people of the New York metropolitan area that the Indian Point plant presents - as does every such giant nuclear plant to its surrounding area - a

potential target of nightmare destruction for any crackpot plane flying overhead. Anyone who has ever seen the crumpled wreckage of the "indestructible" bunkers of the Siegfried Line of World War II - some of the bunkers covered with concrete shielding more than 10 feet thick - knows how little protection such shielding offers, when a well-placed high-explosive bomb lands on top.

III - Damaging Effects On the Human Environment

> "If nuclear power grows in the U.S. at the rate now predicted, we shall have accumulated six billion curies of Strontium 90 by the end of this century . . thirty times as much as would be released by . . nuclear war . . enough to contaminate . . all the fresh water in the world."
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> Radioactive Wastes - An Unsolved Problem: a Report by Scientists of the St. Louis, Missouri "Committee For Nuclear Information"

Reports on Hudson River pollution - even in New York's most reputable papers and magazines - are strangely silent regarding the presence of radioactive contaminants in the river. New York City officials - approving the use of Hudson River water near the Indian Point plant for its drinking water supply - act as if no such pollution were there at all. The Westchester County Health Dept. paints a soothing picture of local purity; gave ready backing last Fall to Con-Edison's faulty salinity figures in accounting for high Beta levels in the Peekskill area; and in Oct/65 joined with the New York State Health Dept. to call (in amazing contradiction to the NY State agency's own published records) radioactivity at Indian Point "about the same as that found throughout the state"(!). All of which was reported as valid news in the N Y Times.

The most extreme position, however, was taken by the U.S. Public Health Service in its Sept/65 "Report On Pollution of the Hudson River and its Tributaries," which in its lengthy list of "Industries Discharging Wastes To the Hudson River" makes no mention whatever of any existing nuclear plant or industry along the river's length - although it has often itself contributed data from its own Water Pollution Surveillance System to the New York State "Radioactivity Bulletin!"

The Hudson River's pollution is so notorious - and indeed so visible - that even the most naive citizen is aware of it. But what is hardly known at all (because it is seldom discussed in public) is that much of the Hudson's most serious pollution - its contamination by radioactive wastes from atomic plants and industries along its banks from Albany down to New York - cannot be effectively removed by any known physical or chemical means. Any biochemist today knows that no possible way exists to neutralize or destroy such pollution. (*) To speak of cleansing or "treating" this Hudson River water to make it safely potable is therefore completely inaccurate, and amounts to serious deception of the public. These wastes - which the atomic plants concerned claim have been reduced to a "harmless" low level - are readily absorbed by the river's sediment and the plant and animal life it contains, and have been found, in AEC and other scientific tests in White Oak Creek at the Oak Ridge, Tenn. nuclear center, and in the Snake and Columbia Rivers of the West, and elsewhere, to become enormously concentrated (by a factor of 100 to more than 1 million) in algae, plankton, fish, and other species as far as 150 miles downstream.

The bed of the Hudson River estuary is below sea level all the way from New York City to Albany, with only a total rise of 5 feet during this distance. Since the Hudson empties directly into the ocean, its waters are tidal all the way to Albany. This means not only that its water is salty for part of the way, but that the shifting tide carries river pollution, including that from the various atomic plants, upstream as well as downstream - among them, wastes from the giant nuclear power plant at

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(* "Radioactivity has one property which is of particular importance in waste disposal - it cannot be destroyed. The treatment of radioactive waste does not destroy the radioactivity, it merely transfers it to another type of waste." - H.J. Dunster, Health Adviser to Britain's AEA, at a Vienna IAEA conference Sept/60)

State of New York
Department of Health
Albany, New York

February 16, 1965

Gross Beta Levels in Water (cont'd.)
(New York State Department of Health Radiation Surveillance Network)

Station	Date	Result pc/l	Remarks
Glenmont	12/14-12/18/64	6	Hudson River
	1/4/65-Date Collected	7	Hudson River
Haverstraw	11/9/64	2	Letchworth V. Reservoir
Highland Falls	12/15/64	5	Bog Meadow Brook
Lansing	12/11/64	2	Airport Well
	12/11/64	3	La Baum Well
	12/11/64	3	Bush Well
	12/11/64	1	Shively Well
Lansing & Dryden	12/11/64	1	Research Park Well
Ossining (Sing Sing)	11/6-11/12/64	88	Hudson River
	11/13-11/19/64	50	Hudson River
	11/20-11/24/64	57	Hudson River
	11/26-12/3/64	60	Hudson River
	12/4-12/10/64	77	Hudson River
	12/11-12/17/64	56	Hudson River
	12/18-12/25/64	57	Hudson River
Ossining	12/15/64	7	Indian Brook Reservoir
Oswego	12/8/64	7	Lake Ontario
	12/21/64	5	Lake Ontario
	1/4/65	5	Lake Ontario
Peekskill (Standard Brands)	11/6-11/12/64	78	Hudson River
	11/13-11/19/64	88	Hudson River
	11/20-11/25/64	76	Hudson River
	11/26-12/3/64	46	Hudson River
	12/11-12/17/64	30	Hudson River
	12/18-12/23/64	58	Hudson River
Peekskill	12/15/64	7	Camp Field WS
Ramapo (T) Hillburn (V)	11/9/64	2	Hillburn WS
Rome	12/8-12/21/64	6	Fish Creek
	12/22/64-1/4/65	6	Fish Creek
Schenectady	12/8-date collected	5	Mohawk River
	12/15-date collected	7	Mohawk River
	12/22-date collected	5	Mohawk River
	12/28-date collected	7	Mohawk River
Stony Point	11/9/64	5	Lone Island
Waterford	12/8-date collected	6	Hudson River
	12/21-date collected	5	Hudson River
	12/28-date collected	5	Hudson River
	1/4/65-date collected	6	Hudson River
Watertown	11/23-12/6/64	7	Black River
	12/7-12/20/64	7	Black River
White Plains	12/7-12/21/64	5	Kensico Mill Reservoir
	12/28-1/4/65	5	Kensico Mill Reservoir
Yorktown	12/15/64	6	Croton Reservoir
	Average	18.1	

* (Reproduction of page in Feb. 16/65 issue of New York State Health Dept. monthly "Radioactivity Bulletin," showing High Pollution of Hudson River water by Beta Activity (largely Strontium 90) at OSSINING and PEEKSKILL, adjacent to Consolidated Edison's 255-megawatt "Indian Point" nuclear power plant - as compared to figures at other N.Y.S. water monitoring stations listed in first column. In February 1964, the OSSINING station registered 109 pci = picocuries per liter of water.)

Indian Point. "Half the time the river is running upstream," writes Peter T. White in a recent New York Times, "Sewage from Manhattan has been traced 60 miles up to Newburgh . . ."

Such transport of river pollutants upstream was loudly denied by Consolidated Edison, when protests were raised in 1965 concerning the tapping of the heavily polluted Hudson at New York City's new Chelsea pumping station in Beacon, 22 miles above the Indian Point nuclear plant. Yet the exhaustive "Safety Evaluation" just issued by the AEC's Division of Reactor Licensing on the matter of the Indian Point addition, flatly states (Page 8), in discussing a possible release into the river of highly radioactive materials in event of a serious accident to the Indian Point reactor: ". . it is possible for the radioactivity to be transported upstream to the Chelsea pumping station (distance: 22 miles) by the (river's) tidal flow."

The effects of the Indian Point plant on the Hudson's water are clearly shown in the monthly Radioactivity Bulletins of the N Y State Health Dept. - 11 of whose 26 water monitoring stations are devoted solely to checking the effects of the Indian Point reactor. These Bulletins show Beta activity in Hudson River water at Peekskill and Ossining, just above and below the Indian Point plant, consistently many times higher, month after month, than at other N Y State water stations.

In Canada in November/64 a public uproar was raised when "dangerous levels" of radioactivity of 10 to 14 picocuries per liter (pcl) were discovered in the drinking water supply of the uranium mining community of Elliot Lake, Ontario. Canada, like many other countries of the world, recognizes the "International Commission On Radiological Protection's" safety standards of 10 pcl for the general public.

Yet in New York City, no public authority has raised its voice in protest when radioactive pollution of Hudson River water at Ossining and Peekskill, near the Indian Point plant, is recorded month after month in NY State Health Dept. bulletins at 50, 60, 80, sometimes over 100 pcl! (See table on preceding page)

When attention was called to these figures in a public statement by this Committee, a Consolidated Edison spokesman issued a blanket denial to the NY Times (Nov.17/65:"No Atomic Peril Found in the Hudson"), crediting the high Beta levels near the Indian Point plant to "harmless" background radioactivity - Potassium K-40 in the "saline. . infiltration" from the Ocean at that point. Such "natural" radioactivity, he asserted, was really "beneficial" and added zest to life - as when "a person salts a steak!"

Soon after, an idea man at a local Radio station, WMCA, issued a 22-page report on the basis of the Con-Ed man's statement, claiming that since "harmless" Beta activity in sea water runs 360 pcl, "at Indian Point there is enough (infiltration of) sea water to account for the 50 to 100 pcl (recorded in NY State radioactivity bulletins)."

The only trouble was, his (and Con-Ed's) salinity figures did not agree with the facts. The skepticism of a scientist at the Wood's Hole (Mass.) Oceanographic Institution led to a local check. It turned out that the salinity claimed for the Peekskill area by the utility and radio station was almost 8 times the actual figure for Peekskill reported in U.S. Geological Surveys of this area. The salinity cited in these surveys indicated a background radioactivity of only 12.5 pcl in Hudson River water at Peekskill (monitored at 50 to more than 100). When reference was made to the "Radioactivity Bulletin" giving figures for Dec/65 (when the Indian Point reactor had been shut down for a fuel changeover) Peekskill Beta levels were found to have dropped then from their usual high rate to 13 pcl. The evidence therefore points to the Indian Point reactor as an important factor in the Peekskill area's high radioactivity rate.

The time has come for responsible citizens to take a good, hard look at how their health and that of their families is being cared for by public agencies and industry "experts." Irresponsible plans, approved and carried out by high-salaried officials on the public payroll must become the target of intensive citizen study, if serious damage to public health is not to occur. New York City's decision to build the Beacon

water link was based on the recommendations of "atomic specialists" on the city staff whose credibility past performance had proved highly questionable. The same N.Y. City "expert" who called documented proof of Hudson River atomic pollution near the Indian Point plant "sheer nonsense," two years ago claimed the nuclear ship SAVANNAH's reactor offered "no hazards whatever" to New York harbor or public - at the very same time that the ship's own sponsor, the U.S. Atomic Energy Commission, was issuing cautioning instructions from its Washington office on potential SAVANNAH reactor accidents and release of radioactive wastes!

> "Is there a threshold below which radiation is completely harmless? The answer at the moment is that we do not know . . probably . . that we shall never know . . I think at the moment we have to assume that any level of radiation may be doing some damage. ." (my emphasis:MHW)
>
> H.J. Dunster, British AEA Health Adviser, at Vienna, September/60

The spot chosen by the N.Y.City Water System for its new Beacon, N.Y. link to the Hudson was particularly unfortunate one - standing almost midway between Albany and New York, exposed to drifting wastes from atomic plants in both directions. The downflow of radioactive wastes begins just above Albany - not far from the Beacon area, as atomic wastes travel - carried in Mohawk River pollution from the great "Knolls Nuclear Power Laboratories" of General Electric at Schenectady: one of the oldest and most extensive nuclear experimental centers in the world. South in Ulster County, at West Milton on the Hudson's west bank, is another important part of the "Knolls" complex, where nuclear submarine reactors are built and tested. Across the river at Poughkeepsie in Dutchess County, two local industries, Duso Chemical and IBM, have for years been licensed to use in their plants nuclear source material. And at Beacon itself is an important testing center, Texaco's "Beacon Research Laboratories" with one of the largest Cobalt-60 gamma irradiation sources in the country - of 22,000 curies strength. To the east of Beacon in the same county, at Pawling on the Connecticut border, the big plutonium fuels development plant of United Nuclear Corporation has since 1958 dumped its liquid wastes into a local pond, whose waters drain into other streams that eventually reach the Hudson at Croton.

It was a curiously vulnerable site to choose for the original Indian Point reactor. Health conditions along this stretch of the Hudson, as reported in "U.S. Vital Statistics For 1962," published by the Government in '64, showed the three causes of death most commonly linked to radiation injury - Leukemia, Miscarriages, and Birth Deformities - already far more prevalent thereabouts than nationally. Greene County, first below Albany on the Hudson's west bank, had nearly 70 % more than the national level of Miscarriages, more than twice the national rate of Birth Defects deaths. Columbia County, across the river, was 43 % above the U.S. Miscarriage rate. Further south on the west bank, Ulster County, where West Milton's big nuclear testing center stands, showed a Leukemia death rate 80 % above the national level. Across the river in Dutchess County, Poughkeepsie had nearly double the U.S. Leukemia rate, was almost 80 % above in Birth Defects.

Below Poughkeepsie stands Beacon and New York City's new Chelsea water station, just above the Putnam County border: a county with nearly three times the national Leukemia death rate. In Beacon, both Leukemia and Miscarriages ranged above national levels in '62. In Orange County across the river, the city of Newburgh was 150 % above U.S. Leukemia rates, 13 % above in Miscarriages, 27 % above in Birth Defects deaths. (Today the N.Y. "Radioactivity Bulletins" show consistently high levels of Strontium 90 present in Newburgh milk.) 20 miles below, on the east bank, in Westchester County's Peekskill-Ossining area adjacent to Indian Point, the following mortality rates were found:

Deaths from Leukemia:	242 % above national rate	
from Lung Cancer:	139 % " " "	
from all types Cancer:	80 % " " "	(Westchester Co., as a whole, was 26 % above)

Children are especially prone to Leukemia - a rare but steadily increasing type of cancer of the blood cells, which is always fatal. In a cross-section sampling of the whole United States, the highest 1962 Leukemia death rate found in any community was in the Peekskill-Ossining area.

To this area, where such serious conditions already existed, was added the Indian Point nuclear power plant in August/62 - to pour a never-ending flood of contaminated coolant water - 300,000 gallons a minute, 432,000,000 gallons a day - into the heavy pollution the Hudson already carried. Now in 1966, if the new reactor is approved, we can look forward to seeing this flood multiplied by nearly four. The Indian Point discharge of coolant water into the Hudson, contaminated by passage through the two atomic reactors, will then amount to 1,641,600,000 gallons a day - more than half again the total daily amount used by the entire city of New York's 8 million residents, and by all the upstate customers who buy its water!

From a river as profoundly contaminated as this, New York citizens and their families will receive a sizable portion of their water supply. One shudders to think of what the effect will be, now and in generations to come, on adults and children of the New York-New Jersey metropolitan area. Shall we let it happen?

And In The Air . .

At a meeting this month in Rome of a new scientific group called the "International Radiation Protection Association" (aimed to supplant the older and sometimes too "frank" International Commission On Radiological Protection?), Dr. Karl Z. Morgan of the AEC's Oak Ridge Laboratories, the Association's new president, made another of the glowing statements so often featured in the world's press, "that nuclear energy had become one of the safest industries in the world" and would ultimately "make the world even safer by eliminating the burning of other fuels that pour toxic materials into the atmosphere." . . The "other fuels" referred to were obviously the coal, oil, and gas now generally used.

Before this rosy statement is once more accepted as true by a docile public, let me point out a few discrepancies of fact. It is true - as it is also true that U.S. government and industry scientists have produced a large and valuable body of research knowledge - that workers in U.S.government atomic plants have been guarded by a rigid code of protective work-rules. Something of the same procedure, though not so strictly enforced, is observed in private atomic utilities and industries. But, together, these groups of workers constitute a small minority indeed of the populations subject today to nuclear hazards. And even the careful check maintained on these same workers, shows only the immediate state of their health - which in the case of atomic injury shows little indeed; since, as a longtime AEC Commissioner, John G. Palfrey, stated in 1965: "radiation injuries . . may not become evident until many years after exposure has occurred." Actually, such damage may not show up for as much as 30 or more years. And no real medical follow-up on workers retired, discharged, or moved away is maintained. Where the general population surrounding reactor sites such as Indian Point are concerned, no health check at all is made.

To say, therefore, as so often is said by atomic officials and utility spokesmen, that no case of damage to public health has occurred during U.S.atomic development, that "no accident in any reactor has caused interference with the public in any way" (AEC Chairman Seaborg, June 18/65) is a statement as grossly misleading as it is completely incapable of proof.

The prevailing tabu on any mention of radioactive pollution of air by atomic plants is a case in point. When a vice-president of Consolidated Edison claimed at a recent N.Y.City Council hearing that atomic power plants were the "long range answer" to city air pollution problems, he was not the first to so obscure the facts. Such claims are often heard at Air Pollution conferences, that nuclear power plants are "cleaner" (simply because their poisonous fumes are invisible!) - ignoring the

serious concern of many atomic scientists over the escape f[illegible] large nuclear plants of certain elusive, radi[illegible]tive gases.

The fact is, that while technical means exist to control smoke hazards from coal and oil combustion, this is definitely not true of atomic effluents. Some of these radioactive gases - undetectable to sight, smell or taste - can penetrate any filter made. One of the AEC's most important divisions is its "Stack Gas Problem Working Group," which constantly explores new ways to meet this still unsolved problem. When asked whether these gases are dangerous when habitually inhaled, as they would be by those living and working near such an atomic plant, Dr. Frederick Soddy of England, one of the world's great nuclear scientists, said: Those who would minimize such dangers should be "sent up to the top of the (plant) stacks, to show they can continue to breathe the air there and live!" (*)

Uncertain weather conditions, air currents and turbulence, add to this problem of unseen escaping gases. At a 1960 Vienna meeting of experts from member countries of the UN's International Atomic Energy Agency, the late Dr. Leslie Silverman of Harvard University, then chairman of the U.S. AEC's Advisory Committee On Reactor Safeguards, observed that "one of the factors over which we have very little control after (nuclear) wastes are dispersed is the meteorological . ."

In 1964 the N.Y.City Dept. of Air Pollution Control reported a puzzling increase of 87 ½ % the year before in "two highly dangerous gases"in N.Y. City air - carbon monoxide and nitrogen dioxide - for which, said the N Y Times story, "there was no available explanation," since sootfall had dropped 17 ⅓ % in the same year. Was it in fact such a mystery? Medical scientists have long believed that one reason air pollution has become such a problem and taken so tragic a toll in lung disease and cancer, is because the man-made radiation in the atmosphere, derived from past nuclear bomb tests, present underground tests, and industrial atomic development, has created new and dangerous compounds from chemicals already present in the air we breathe. To add new radioactivity to our already highly polluted atmosphere by building giant nuclear plants for power or water desalinization, should be unthinkable - if we have any regard for our health or that of our descendants.

The constant slight escape of radioactive fumes is one of the most insidious of an atomic reactor's dangers; for it is continually, invisibly at work, damaging the health, shortening the life span, and threatening the genetic future of all around. (The world's scientists agree that the only really safe genetic dose of radiation is no dose.) For these escaping gases, reduced though they are to the smallest possible minimum, contain the deadly isotopes which cause Leukemia and Bone Cancer and the genetic damage which results in deformed, stillborn, or mentally retarded children. These are some of the unrecorded casualties that are never mentioned in the figures given by those who boast of the "safety record" of nuclear plants; for the deformities and disease resulting from the constant escape of radioactive fumes into the environment develop unnoticed through the years among those who live and work in the contaminated area. Deaths may not occur for decades, and are rarely ever traced to their true cause.

We must not forget that today humanity's reservoir of tolerance for such radioactive poisons is being steadily depleted - subject as we are to an ever-increasing total of fallout from past and present nuclear bomb tests, natural background radiation, pollution from various forms of atomic industry, medical treatments, etc. - so that human resistance to Leukemia and other forms of cancer is bound to be lessened and the number of cases increased. This rise in deaths from such diseases is vividly shown in current World Health reports. Indeed, points out Jean Pignero, pres-

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(* Post-Hearing Note: A standard feature of nuclear power plants to date has been their lofty stacks - often to 500 feet or more - to carry any release of radioactive gases high into the air. Plans for the new Indian Point reactor - on the claim that such releases have now been reduced to "insignificant" levels (What about the highly toxic release of gases during a reactor malfunction or serious accident?) show no provision for any stacks at all!

ident of the French "Association Against Radiological Hazards," this reservoir of human tolerance may some day be so exhausted that people vitally in need of X-Ray treatments, will not even dare undergo them!

Man Versus Profits

fantastic waste of water,

Why, then, in the face of so much accumulated evidence of inefficiency of performance, potential nightmare accidents, and spreading contamination of radioactive poisons to our environment, is so mighty an effort being made today to build more and more of these vast and hazardous reactors?

The answer can be put in two short and eloquent words: money and power. In no other type of development have the stakes been quite so high, the financial rewards so swift and dazzling, as they are today for the limited, powerful groups involved in reactor production. First, are the prestige and power that go to the government officials directly concerned; and the rich political patronage accorded Congressmen active in parceling out such projects. Next, come the huge sums awarded in contracts and "maintenance" to giant firms like General Electric and Westinghouse, who receive the lions' share of such contracts to design and build atomic plants, and operate in many foreign countries. Such contracts often run into hundreds of millions of dollars. . . Along with this goes the highly profitable financing of such projects by banks, insurance companies and other investment groups. One has only to look at the corporate background of the trustees on the board of Consolidated Edison - the biggest and richest utility in the world - to see the giant interests represented there: Morgan, Chase Manhattan, First National City Bank, Dun & Bradstreet, Metropolitan Life Insurance, N.Y. Life Insurance, IBM, Continental Can, Lever Brothers, Socony Vacuum Oil, Monsanto . .

Not to be overlooked in this curious epic are the universities, and the scientists and engineers who draw an expensive living from the mushrooming enterprise of atomic "research and development." . . Another particularly lucrative field is the insurance "take" involved in the reactors' maintenance. Here, there are rosy plans indeed for the coming decades - which the U.S government, like every other government of nuclear capacity in the world, anxious to promote steady industry growth and expanded production of plutonium for military use and foreign trade, is glad to encourage: "We believe that in 10 years from now," announced AEC Commissioner Ramey last summer, "the atomic power industry will be on a more commercial basis . . in 1980 (we should have) anywhere from 60 to 90 million electric kw of capacity. This would mean that . . approximately 70 to 150 atomic power plants of 500 (el) megawatts to 1,000 megawatts would be constructed. ."

Now consider what such a capacity would mean in annual premiums the private insurance company pools would receive. Here is a list* of current premiums on large nuclear reactors, built or planned:

Reactor	Location	(ekw) Power Level	Annual Private Insur. Premiums	Amount of Protection
Carolinas-Virginia	Parr, So. Carolina	17,000	$ 28,297	$ 6.6 million
Dresden	Morris, Ill (Chi. sub)	200,000	233,000	60.
Indian Point	Peekskill, N.Y.	270,000	266,500	60.
Big Rock Point	Charlevoix, Mich.	70,400	153,000	36.
Yankee	Rowe, Mass.	175,000	125,000	60.
Peach Bottom	York Co., Penna.	40,000	73,354	17,4
Oyster Creek	Tom's River, N.J.	515,000	200,000	60.
Brookwood	Ontario, NY (Roch. sub)	420,000	221,000	60.
San Onofre	San Clemente, Calif.	375,000	260,000	60..
Conn. Yankee	Haddam Neck, Conn.	462,000	269,750	60.

(*Price-Anderson Hear'gs) Totals: 2,544,400ekw $1,829,901

Since the present power total of 2 ½ million ekw calls for annual premium payments

of nearly $2 million, Mr. Ramey's predicted number of future nuclear plants would bring the insurance companies $ 45 to $65 million in premiums every year. No wonder the insurance companies take so avid an interest in nuclear development!

Another eager participant in this scramble for quick profits is the uranium mining and stock speculation group. They have not forgotten the huge fortunes made almost overnight by lucky traders like Joseph Hirshhorn, who in 1953 invested $30,000 in Blind River uranium mines in eastern Ontario and emerged 2 years later with $60 million. The renewal of the Price-Anderson Act has breathed new life into this group. Big mines are merging and expanding; little uranium mines, closed up as hopeless a few years ago, when demand and prices dropped, are opening up again for business. The price of uranium is back to boom levels and expected to climb much higher. Speeches by AEC officials to mine owners' conventions sound like sales managers' pep talks, promising skyrocket prices in a few short years. On the Toronto, Canada, Stock Exchange, uranium shares have suddenly come awake - especially since the recent visits there of West European government buyers. The uranium market is swinging again.

Last but not least, the electric utilities themselves: Why, with all the technical trouble atomic construction and maintenance involves, are they so eager today to organize their financial reserves and "go nuclear?" What is in it for them?

It is often forgotten that where electrical companies are concerned, nuclear development is a two-way street. It takes more and more electric power - a tremendous lot of it - to make the atomic fuel that drives the reactors and to service and supply the mighty complex of government and industry nuclear development. As long ago as 1955, the AEC had become the largest single consumer of electricity in the United States - the utilities' biggest customer - and was buying and using as much electric power to research, test and make atomic bombs and weapons as was then being used to heat and light 3/4 of America's 50 million homes. Now consider the enormous growth atomic development has made since 1955, and you will no longer wonder at spreading power grids spanning the American continent; at the constant cry for more and more electric power here and abroad; at rubber and copper and exotic metals in ever shorter supply, with distant and ruthless wars being waged to secure them; or at serious and growing shortage of decent water everywhere for ordinary daily human use.

The truth is, we have reached the point where humanity stands face to face with the struggle for money and power. In the face of so much organized greed, there is little chance for human survival unless a determined, rational campaign of opposition is begun. The ordinary citizen today has come to accept the control of his community by a few. The fact that large utilities like the sponsors of the Indian Point plant often hold an important part in a community's or a region's tax structure (Consolidated Edison is New York City's, and probably also Westchester County's, largest taxpayer) impresses local politicians and business circles, and often tips the scales of community opinion. Yet who gives the utilities their prestige and tax importance? The thousands and millions of electricity consumers who pay without protest their monthly bills! Neither they nor the community's government are in any way indebted to the utility for its tax "contribution." Their money paid for it. The fact is, the utility is obligated to them for its privilege to operate at a guaranteed profit.

It is for the citizens, and the citizens only, to decide whether utility operations endanger the safety and health of their community.

> "The hazards from nuclear reactors for power production is a greater potential threat than from atomic weapons testing."
>
> Graham DuShane, in an editorial in Science

Statement

It is on the basis of the documented facts above that the citizens of our Committee oppose this project. We urge the rejection of the present proposal to add a second and larger nuclear reactor to the Indian Point plant. We believe the only acceptable solution to existing problems in this area is the total conversion of the Indian Point nuclear plant (as was recently done at the Hallam Plant in Nebraska) to non-nuclear fuels, which are known to be in plentiful supply for centuries to come. We urge that steps be taken at once to accomplish this. Even the present reactor containment building may now have absorbed so much radiation as to present a serious hazard. It should be dismantled and removed before further damage is done.

Moreover, we demand, as residents of metropolitan New York, that the Chelsea intake of water into the New York Water System at Beacon, N.Y. - so closely affected by Indian Point nuclear wastes, past and present, in the river and its sediment - be stopped at once.

Such matters cannot be left to chance or to the personal whim of those with wealth and influence. The time has come for responsible citizens to set up a clear and enforceable code of ethical standards for the control of business and government actions such as those discussed above, which directly affect the health and safety of their families and their community.

We believe that the names of officers and trustees of Consolidated Edison - those who approved the Indian Point project and are willing to inflict such hazards on their fellow-citizens - should be laid on the public record; and that city, state, and federal officials who support the new Indian Point proposal (or sit back and take no public action to oppose it), as well as the members of the New York City Council and Board of Estimate who voted the funds to bring polluted water to the city's people, should be held personally responsible for failing to protect the health and safety of the citizens who elected them and whose taxes pay for their salaries.

COMMITTEE TO END RADIOLOGICAL HAZARDS

Mary Hays Weik, Secretary

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"NEW WAVE" OF GIGANTIC NUCLEAR POWER PLANTS IN PROSPECT FOR NORTH AMERICA

PLANT (or Owner)	Location and Pop'n at Site (if reported)	Capacity (Mwe) (million watts)	Water Outlet For "Low-level" Wastes (*already contam. by other nucl. sources)	Cities Endangered	(Mi) frm Site	Population Of Cities
Northeast U. S. . .						
Addition to INDIAN POINT PLANT	Buchanan, West-ch.Co, NY (2000)	873 (1,143 Tot)	Hudson River*	Peekskill Metro. NYC	2 10	18,700 10,700,000
9-MILE POINT	Scriba, Oswego Co. NY (268)	500	Lake Ontario*	Oswego Syracuse	7 30	22,200 216,000
BROOKWOOD	Ont. Ctr NY (292)	420	Lake Ontario*	Rochester	12	305,000
OYSTER CREEK	So. of Tom's River, N. J. (8000)	515 (1st unit)	Barnegat Bay and Atlantic Ocean	Metro. Phila Princeton NJ Atlant. City	25 25 35	4,342,000 11,900 59,000
PHILA ELEC et al (I)	So. of Trenton New Jersey	1,000 (1st unit)	Delaware River	Metro. Phila Trenton	10 5	4,342,000 107,000
PHILA ELEC (II)	So. of Atlant Cy	1,100	Atlantic Ocean	Atlant, City	?	59,000
CONNECTICUT YANKEE	Haddam Neck Conn (25 mi. from MILLSTONE PT. nuclear plant)	462	Conn. River* and Long Isl. Sound*	Middletown Meriden Hartford	8 11 18	33,250 55,000 158,000
MILLSTONE POINT	Waterford, Conn (6600)	549 (1st unit)	Niantic Bay* and Long Isl. Sound*	New London Groton	2 2	35,000 45,000
BOSTON EDISON PLANT	"near Boston"	540 (1st unit)	Mass. Bay* and Atlantic Ocean	Metr. Boston	?	2,590,000
MAINE YANKEE	Bailey Pt., Me.	650--800	Casco Bay & Atlant	Portland, Me.	10	71,000
VERMONT YANKEE	Vernon, Windham Co., Vt. (559) (20 mi. from YANKEE nucl. plant at Rowe, Mass)	500	Connecticut Riv*	Brattleboro Keene, N.H.	5 18	11,700 17,600
LONG ISLAND LIGHTING	Shoreham, LI, NY (near BROOKHAVEN Nuclear Lab. at Upton, LI)	500	Long Island Sound*	Pt Jefferson Riverhead	8 14	2,000 6,000
GEN PUBL. UTIL	Nr. Reading, Pa	750	Schuylkill Riv ?	Reading	?	98,100
Southern U. S. . .						
VIRGINIA ELEC & POWER	Bacon's Castle Virginia	750	James Riv/Hampton Rds/Ches. By & Ocean	Williamsbrg Newport News Norfolk	12 10 25	7,000 130,000 322,000
HARTWELL	Keowee, So. Car.	1,644	Hartwell Res. and Savannah River*	Clemson Coll Greenville Anderson	3 15 15	(coll) 4,500 67,000 41,000
CAROLINA LITE & POWER	Hartsville, S.C. (6400)	700	Lake Robinson, Big Blk Cr, Gr. Pedee R	Florence	20	24,700
BROWN'S FERRY (TVA)	Wheeler Lake, Alabama	2,200	Wheeler Lake and Tenn. R. System	Decatur, Ala Huntsville Athens, Ala.	5 25 10	30,000 122,000 13,600
TURKEY POINT	Dade Co. Flor.	1,520	Biscayne By & Ocean	Metro. Miami	17	935,000
SEFOR (Exper. Fast Breeder)	Cove Creek Arkansas	20 Therm. megs.	Illnois R., Ten Killer Res. & Ark R.	Fayetteville Fort Smith	16 15	22,900 64,500
Midwest U. S. . .						
DRESDEN 2 & 3)	Morris, Ill. (8000)	1,430 (1,638 Tot)	Des Plaines R.*& Illinois Riv*	Joliet Met. Chicago	20 30	69,500 6,221,000
CONSUMERS POWER & IOWA P.	Nebraska City Neb. (7200)	800	Missouri River*	Peru (Neb. Sta Tchr's Coll)	15	(coll) 800

PLANT (or Owner)	Location and Pop'n at Site	Capacity (Mwe)	Water Outlet For "Low-level Wastes	Cities Endangered	(Mi) to Site	Population Of Cities
M i d w e s t U. S. . (cont'd)						
OMAHA PUBLIC POWER	Fort Calhoun Neb. (329)	400	Missouri River*	Omaha, Neb.	5	340,000
				Fremont "	10	22,500
				Ccl.Bluffs,Ia	5	58,500
POINT BEACH	Two Creeks Wisconsin	454	Lake Michigan*	Manitowoc	10	32,300
				Two Rivers	5	12,400
				Green Bay	30	82,500
QUAD CITIES	Cordova, Rock Isl.Co.,Ill. (364)	1,515	Mississippi Riv*	Davnpt,Ia.& RckIs/Moline	12	319,300
				Muscatine,Ia	35	21,000
CONSUMERS POWER	Palisades,Van Buren Co,Mich	710 (1st unit)	Lake Michigan*	South Haven	4	6,150
				StJo-BtnHbr	15	30,000
				Kalamazoo	25	86,000
NORTHERN STATES POWER	Monticello, Minn. (1500) (10 mi. from ELK RIVER,Minn.nuclear plant)	472 (1st unit)	Mississippi Riv*	Minneapls-St. Paul	25	1,482,000
				St. Cloud	25	37,500
W e s t e r n U. S. . . .						
FORT ST. VRAIN (High Temp. Plant)	Platteville, Colo. (600)	300	So. Platte Riv.*	Greeley	15	34,500
				Boulder	25	50,000
				Denver	25	520,000
MALIBU BEACH	Corral Canyon, California	462 (1st unit)	Santa Barbara Chann*&PacOcean	Sta. Monica	5	88,500
				Met.Los Ang.	5	6,000,000
SAN ONOFRE	San Clemente, Calif.(14,000)	429	Santa Catalina Gulf* & Pacif.O	Met.Los Ang.	20	6,000,000
				Met.SanDiego	40	1,033,000
PACIFIC GAS & ELECTRIC	?	750	Pacific Ocean?	?	?	?
SO.CAL.METRO WATER DIST. (powr&desaltg.	Long Beach,Cal (368,000) (offshore isl?	1,800	Pacific Ocean	Metro.L.A.	..	6,000,000
				San Diego	40	1,033,000
CALIF DEPT OF WATER RES (Nucl Plant to run Tehachapi Pump	Probably at Cayucas(1000) SanLuis Obispo Co., Calif.	1,200	Morro Bay and Pacific Ocean	Atascadero	15	6,500
				Paso Robles (CalStaPolyCol)	15	6,800
				SanLuisObisp	20	26,200
SACRAMENTO MUNIC.UTIL.	nr. Sacramento	500	Sacramento Riv.	Sacramento	..	265,000
WASH.PUBLIC POWER (new Hanford React.	Hanford Res** /Washington	800	Columbia River*	Richland	3	23,500
				Pasco	5	14,500
C A N A D A						
PICKERING PLANT	Pickering, Ontario (1800)	1,000	Lake Ontario*	Toronto	10	672,000
				Oshawa	10	62,400
DOUGLAS PT**	Inverhuron,Ont	200	Lake Huron*	Kincardine	10	3,000
QUEBEC PLANT	Becancour,Que. (bet. Quebec & (Montreal)	250	St.Lawrence Riv*	3 Rivieres	3	53,500
WHITESHELL** TESTING CTR	Pinawa, Man.	25 Therm Meg.	Winnipeg River & Lake Winnipeg	Selkirk	35	8,600
				Winnipeg	45	266,000

(** Also includes waste burial site)

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