



FEDERAL WATER POLLUTION
CONTROL ADMINISTRATION

Northwest Region

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The enclosed speech was presented by R. F. Poston, Regional Director, Pacific Northwest Region, FWPCA on Friday, March 15, before the Joint Hearings by the Washington State Joint Committee on Nuclear Energy and the Governor's Advisory Council on Nuclear Energy and Radiation, Richland, Washington.

Herbert E. Simison
Regional Information Officer

THE F.W.P.C.A. LOOKS AT
REGIONAL NUCLEAR POWER PLANT SITING*

By

R. F. Poston**

I appreciate the invitation to speak before the Washington State Joint Committee on Nuclear Energy and the Governor's Advisory Council on Nuclear Energy and Radiation; for, to quote from my letter of invitation, "it appears necessary and propitious that nuclear plant siting be discussed before official bodies."

The problems of nuclear power development have obviously not been settled to the satisfaction of many of our scientists and opinion makers, as was brought out by Senator Thruston Morton in the Congressional Record of February 28, 1968, when he introduced Senate Joint Resolution 148 to establish the Federal Committee on Nuclear Development. For the Senator, and others, are convinced that such a body is needed to probe the atomic energy program generally, with the specific objectives of ascertaining whether the existing nuclear program is responsive to the public need and determining what changes should be made in that program. The committee is to assess "the potential impact of rapid atomic development upon the health and safety of the American Public (including the

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effects of waste disposal, radioactive air and water pollution, the location of plants in urban areas and possible losses caused by malfunction of nuclear plants)."

Because the unknown is man's greatest fear, I believe that, in the long run, benefit to nuclear power development will be gained from full public disclosure of all the facts. We should approach power plant siting with all the expertise available and with conservative judgment to insure that the choices made are the wisest and safest.

I am pleased you have asked for the viewpoint of the pollution control agencies today, for the Federal Water Pollution Control Administration has, by law, certain responsibilities which will have a bearing on your programs. Let me say at the outset, however, that I am in complete accord with BPA Administrator H. R. Richmond that we need not drift into an adversary position with the power industry over the pollution issue. As I hope to make clear today, we offer at any time to join with the power industry in working out sound solutions to any pollution problem associated with nuclear power development.

I note on the agenda which I received that my assigned topic appears to mistake my agency -- the Federal Water Pollution Control Administration -- for that under the direction of Mr. Roy Harris -- the Washington Water Pollution Control Commission. I can understand how the titles can become confusing. However, the minor difference seems unimportant when we consider that Mr. Harris and I share similar enabling legislation and program goals. Our jobs are the same;

only our respective roles differ. Mr. Harris is here today and -- if it is agreeable to you -- we can serve as a team to answer the questions which may come to mind after my presentation.

From our viewpoint, as we look at nuclear power plant siting, we see essentially the same problems we have faced in the past with municipal and industrial wastes. The pollution control agency hasn't platted the cities or located the mills and factories. They selected their own sites, not always in the wisest fashion from the standpoint of their environmental impact. They have produced wastes with certain characteristics which were discharged into our waterways with adverse effects on a water use or in contravention to public policy. As a result, our job -- the job of the regulatory agencies -- has been to see that the necessary treatment or control works were installed by the polluter. This is basically the same approach we are empowered to take with nuclear power plants as they are built. However, there is one potential difference; that is, nuclear power plants can yet be located at a number of alternative sites and, by early cognizance of environmental factors, the economic and social costs of nuclear installations can be minimized.

Today's water pollution control viewpoint is embodied in the provisions of the Water Quality Act of 1965 which gave the FWPCA -- and the States -- strong new laws designed to prevent pollution,

as well as restore already polluted waters. Under this new law, we can no longer sit idly by until pollution damages have occurred before we act. The water quality standards are the answer.

The standards consist of two parts: (1) a description of water uses and the water quality criteria necessary to serve them; and (2) a plan of implementation and enforcement of treatment and control measures. They were initially prepared by each State, after many public hearings on their purpose and content. The States then officially adopted their standards and submitted them to the Department of the Interior for determination of their compatibility with the Water Quality Act. Today, the standards for all four Columbia Basin States have been approved, and we have the basis for a sound State-Federal program of pollution prevention and abatement in the Northwest.

Standards of water quality were set for all interstate waters (which is the limit of Federal jurisdiction). "Interstate" waters are defined as all rivers, lakes, and other waters which flow across or form a part of State or international boundaries, including coastal waters. Coastal waters are defined as ocean waters along straight and indented coasts which are subject to the ebb and flow of the tides. Tributaries of interstate waters need not be included in the standards, but pollution of those tributaries which causes a violation of standards in the interstate waters is subject to abatement under the Act. Under these provisions, the entire Columbia River -- from the Canadian border to the mouth -- is subject to standards which are jointly enforced by the States and the Federal government.

Much has been made of the fact that the Washington and Oregon temperature criteria for the Columbia River are not identical. However, I emphasize that the Washington and Oregon standards are, nevertheless, compatible. While there is a minor difference in the incremental portions of these two States' temperature criteria, they set identical maximum temperatures. And -- most importantly -- both States require that all new sources of pollution (including thermal pollution) provide the highest and best degree of treatment under existing technology.

The standards were not intended to be static; provisions were drawn into the law to allow revision as scientific and technologic knowledge is extended over time. But I expect any revisions in water quality standards to comply essentially with the guidelines and policies which were used in approving the first sets.

One aspect of these guidelines was expressed recently by Secretary Udall and will bear considerably on the future implementation of standards. Let me quote from the Secretary's statement and then elaborate on it for a moment in the context of nuclear power development:

"Waters whose existing quality is better than the established standards as of the date on which such standards become effective will be maintained at their existing high quality. These and other waters . . . will not be lowered in quality unless and until it has been affirmatively demonstrated to the State water pollution control agency and the Department of the Interior that such change is justifiable as a result of necessary economic or social development

and will not interfere with or become injurious to any assigned uses made of, or presently possible in, such waters. They will require that any industrial, public or private project or development which would constitute a new source of pollution or an increased source of pollution to high quality waters will be required, as part of the initial project design, to provide the highest and best degree of waste treatment available under existing technology . . ."

This means that the water temperatures of Northwestern streams cannot be artificially raised by thermal discharges unless Mr. Harris and I, and our technical staffs, can be convinced that such degradation is absolutely necessary as an unavoidable side-effect of nuclear power production and, further, that such degradation will not interfere with water uses, such as the cold-water fishery. We know, as I am sure you do, that existing technology is adequate to control waste heat on site at the nuclear plant. And Washington, Oregon, and the FWPCA will require that that technology be applied to protect the public interests in our clean waters.

The remaining issue which the industry might attempt to prove would be that treatment is not economically feasible; that is, that the cost of treatment itself would preclude the development of nuclear power. Since nuclear plants elsewhere in the country are already using these treatment methods and since the Batelle-Northwest report suggested sites which would require cooling towers, it appears that the case

has already been made that such treatment is, in fact, compatible with the economics of power production and transmission.

I might repeat at this point that these policies are incorporated in both the State and the Federal laws and regulations. I bring this up since someone recently indicated to me that you might wish to change Mr. Harris's program by legislative enactment. Such an occurrence would not alter the Federal authority, and we would continue to apply the Water Quality Act in full accord with the intent of the National Congress which enacted it nearly unanimously.

Let us turn now to the wastes generated by nuclear power plants which are of concern to the pollution control agencies. They include both heat and radioactivity. Of grave concern in the long run will be the solid radioactive wastes from the reprocessing of fuel elements. These long-lived wastes cannot be dumped into the rivers, of course; so they must be stored in containers which, on occasion, may leak radioactive materials to the surface or ground waters. We must assure that these wastes are carefully and assuredly prevented from polluting our water supplies (both surface and ground) and endangering human life. The magnitude of this problem will be overwhelming in the future, when we consider that 2 billion gallons of these wastes will be generated annually by the 1990's under existing plans for nuclear energy use. Where will we put all that radioactive material? Bold new answers to this question will have to be found soon.

But today, the waste which is the most important in everyone's mind is heat -- the two-thirds of energy which is wasted in the production of electricity by nuclear reactors. The waste heat is transferred to the cooling water and must be controlled to avoid damage to the environment. Fortunately, there are answers to this problem, with many alternative control measures presently available: forced draft cooling towers, natural draft cooling towers, an air-cooled (or completely dry) system, cooling ponds, and beneficial use of the heat. Because of its potential for minimizing costs of meeting pollution control goals, I feel everyone's efforts would be best directed toward development of beneficial use of heat -- in agricultural or industrial operations, for instance -- so that we could truly agree with our friends who call waste heat "thermal enrichment."

Traditionally, the water pollution control agencies have specified the end-results of waste treatment which are expected of the industry (for example, percent of waste reduction) and have let the waste discharger determine the choice and design of treatment or control devices to meet those requirements. The nuclear power industry will, ultimately, be treated just the same.

However, because we are yet in the early stages of development in this industry, we can come together to plan for meeting both the environmental protection goals of the region and satisfying the electric energy needs of the future. This opportunity was not with us in other

industries, and we face a challenge for effective cooperative action to meet our dual goals of economic growth and a clean environment.

But we cannot look at the water pollution impact of just one plant in determining the industry's compatibility with pollution control laws. For we know that we will have some fifteen or twenty such plants in the near future. We must consider the collective effect of all the plants planned for the next twenty years, and beyond. We would not be sufficiently far-sighted to plan for one plant to raise the temperature of the river less than a degree (even if that were allowable) when the capacity of that plant is planned to increase four times in twenty years to reach its optimum capacity. And other plants may be planned for construction just upstream, downstream, or across the river from that one plant. The total, regional nuclear power outlook must be considered jointly by the industry and the pollution control agencies so that we may truly have our cake and eat it too: A clean and usable environment for continued economic growth.

In closing, I do not want to leave the impression that Mr. Harris and I are the only ones concerned with the potential side-effects of nuclear power development. As I said, from a water pollution control standpoint, a nuclear power plant could be built almost anywhere and not adversely affect water quality, since technology is available to control waste heat and radioactivity on-site. But certain sites will have definite advantages over others in preventing damage to the total environment (the land, air and water).

From an air pollution standpoint, there will be some sites which will not endure the discharge of heat in vapor to the atmosphere. (Although, I've had my staff do a literature search on this problem, and it appears that extreme climatological conditions would have to exist before serious ground fogging would occur.) To protect the air environment, someone recently -- rather seriously -- suggested that a good site would be on one of our mountain peaks to have ideal meteorological conditions.

Our land use patterns will require that nuclear plants not conflict with urban uses, usurp valuable recreational areas, or deter from the attractiveness of known scenic areas -- such as the Skagit Basin, or some of our coastal beaches, for example.

These and other environmental factors must be weighed in the public interest to assure the optimum social and economic benefit from the peaceful use of nuclear energy. We know that the problem is complex, but let's not fool ourselves into thinking that ignoring these public needs will make the problem easier.

Because there is no great background of experience with nuclear plants, and the effects of their wastes on the environment is conjectural, it would seem prudent to locate the early plants on the open sea coast where the waste heat can be dissipated into the ocean with minimum effects on the environment. This approach was recently sponsored by the Pacific Northwest Pollution Control Council. Clustering of plants --

to take advantage of economies of scale and integration of facilities (electrical, hydraulic, and heat disposal or use) -- could bring us needed electric energy while we conduct further study of the environmental impacts on the inland environment and research additional means of making beneficial use of waste heat. Choosing coastal locations, however, should not mean that beach recreational areas should be destroyed or major shellfish areas damaged.

Finally, I do not mean to imply that site selection is an exclusive, or even primary, function of the environmental control agencies. What I am saying is that, with the combined intelligence and expertise which the power industry and the environmental agencies possess, optimum benefits can be reached through cooperative, coordinated regional site planning. We have the unprecedented opportunity for effective preventive medicine in protecting environmental health while we bring on needed nuclear electricity. Without such cooperation, the burden will be upon industry, alone, to comply with existing laws and regulations in an after-the-fact and potentially wasteful fashion. The hazards of single-purpose nuclear power development are many: social and economic costs, wasted talents, and a possible permanent scar on the public image of the industry.

As a closing thought, may I quote from the recent remarks by Commissioner Wilfrid E. Johnson, of the Atomic Energy Commission, on the problems which you and I will face:

"Certainly, a very pressing challenge that faces us is that associated with what people are calling 'thermal pollution.' Electric generating plants reject heat to the environment. . . . Nuclear plants, however, reject about 50 percent more heat to the water per unit of power than the best fossil-fueled plants in operation today. . . . the growth of electric power is so rapid that it has been estimated that by 1990 more than half of all the river run-off in the United States would be required for cooling purposes if the heat were rejected to the rivers. There can be no doubt that the power industry will have to use cooling towers and other methods for disposing of heat But it is also clear that we need a great deal of factual information that we simply don't now have as to the effects of water temperatures on the health and vigor of wildlife. While protecting historic conditions may be a safe approach until we acquire a much better understanding of the effects of industrialization on our major watersheds, we should be pointing toward an optimum solution for the use of our environment. . . ." ^{1/}

Gentlemen -- this is our challenge. It will be no small job. The FWPCA offers to work with your Joint Committee on Nuclear Energy and the Governor's Advisory Council on Nuclear Energy and Radiation, the power industry, planning groups, and any others concerned, to the end that the job will be done on time.

^{1/} "Present Status and Future Prospects of Nuclear Power," Remarks by Wilfrid E. Johnson, Commissioner, U.S. Atomic Energy Commission, before the Health Physics Society, Augusta Townhouse, Augusta, Georgia, Jan. 24, 1968.

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