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50-331

JUN 18 1969

Honorable Harold E. Hughes
United States Senate

Dear Senator Hughes:

Thank you for your letter of April 30, 1969, enclosing a letter from the senior American government class at the Iowa Braille and Sight Saving School regarding the safety of nuclear power plants. I note that the class became concerned about the use of atomic energy as a source of electric power after reading the article, "The Myth of the Peaceful Atom," which was reprinted in the Des Moines Sunday Register from the March 1969 issue of Natural History magazine.

The authors of this article have included a number of statements unsupported by facts and quotations out of context in attempting to support their thesis that the application of nuclear energy to the generation of electric power is too fraught with danger to pursue.

While I believe that public airing of the potential hazards involved in the use of nuclear energy is essential in dealing with control of man-made radiation, I regard it equally essential that the whole story, in balanced context, be presented to the public in the responsible media and public forums. Unfortunately, this article exhibits little effort to achieve perspective. Its conclusions concerning the practical uses and safety of nuclear energy paint a pessimistic outlook not shared by the preponderance of informed scientific opinion.

Of even more concern than publication of an essentially one-sided viewpoint on the hazards and benefits of nuclear energy are the assertions and implications in the article that the AEC is not performing its statutory function of protecting the health and safety of the public from the potential radiation hazards involved. Little effort is made to indicate the rigorous measures taken to prevent accidents and to mitigate the effects of accidents at nuclear reactors in the highly unlikely event that they should occur, or to present the safety record.

I understand that one of the authors, Miss Elizabeth Hogan, appeared before the Congressional Joint Committee on Atomic Energy during its extensive

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hearings on "Licensing and Regulation of Nuclear Reactors" in 1967, and presumably the printed record of the testimony of all the witnesses was readily available to her. The testimony showed, for example, that nuclear power plants licensed by the AEC have compiled an outstanding safety record, with no radiation fatality or serious exposure resulting from their operations to date. No instance is known where any member of the public has been exposed, as a result of operation of these plants, to radiation levels exceeding annual limits specified in AEC regulations which are designed for protection of the public. The full record of these 1967 hearings constitutes a comprehensive review of the Government's regulatory program for nuclear reactors, and provides answers and perspective to many of the statements and implications made in the article, "The Myth of the Peaceful Atom." The printed record of these hearings, in two volumes, is enclosed.

I am enclosing comments prepared by the AEC staff which are generally addressed to the principal conclusions that seem to have been drawn by the authors regarding safety of nuclear power facilities, and radioactive waste control management. One of the enclosures to the comments, AEC testimony before a subcommittee of the House Committee on Science and Astronautics, also discusses the safety of transportation of radioactive materials which was one of the concerns mentioned in the letter from the Iowa Braille and Sight Saving School class. Also enclosed are copies of the booklets, "Licensing of Power Reactors," and "Atomic Power Safety," which describe the AEC licensing process, the characteristics of typical light water cooled and moderated nuclear power plants, and measures taken for public safety.

Since the class expressed particular concern over tornado protection for a nuclear power plant planned for construction near Cedar Rapids by the Iowa Electric Light and Power Company, I would like to comment on this point. The utility's application for a permit to construct the Duane Arnold Energy Center was received in November 1968, and is undergoing the comprehensive safety reviews required by the AEC licensing process. Adequate protection against tornadoes is required for nuclear power plants, especially those sited east of the Rocky Mountains. Generally, such plants are designed to withstand tornadic winds with a 300 miles-per-hour rotational velocity, a 60 mph translational velocity, and a pressure drop of 3 psi in 3 seconds, which is believed to be representative of the worst tornado that might strike a plant in the "tornado belt." In addition, the simultaneous imposition of tornado-generated missiles is evaluated together with the other tornado loads.

As a design objective, the reactor is to be capable of being safely shut down and maintained in a safe shutdown condition even if incoming power

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Honorable Harold E. Hughes

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lines were lost and superstructure damage resulted to the reactor and turbine buildings.

If I can be of any further assistance, please let me know.

Cordially,

{Signed} Glenn T. Seaborg

Chairman

Enclosures:

1. Licensing and Regulation of Nuclear Reactors, Parts 1 and 2
2. AEC comments
3. Booklets, "Licensing of Power Reactors" and "Atomic Power Safety"

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- PDR (50-331) — *Rec'd 6/23/69*
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- DR Reading
- GErtter (DR-2161)

NOTE: Draft ltr concurred in by PAMorris (DRL), BSchur (OGC), and HKShapar (OGC)

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| DATE ▶ | 6/9/69 | 6/16/69 | 6/17/69 | | | |

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(Date)

TO:

Com DIR. of Reg -

For appropriate handling

Com

Reply for Chairman's signature

For information: GM _____ Commissioners _____ DR

Remarks

Julius H. Rubin
For the Chairman

DR-2161

JOHN SPARKMAN, ALA., CHAIRMAN

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United States Senate

COMMITTEE ON BANKING AND CURRENCY
WASHINGTON, D.C. 20510

DUDLEY L. O'NEAL, JR.
STAFF DIRECTOR AND GENERAL COUNSEL

April 30, 1969

Honorable Glenn T. Seaborg
Chairman
Atomic Energy Commission
Washington, D. C. 20545

Dear Dr. Seaborg:

I have enclosed a letter which I received from the senior American Government Class at the Iowa Braille and Sight Saving School expressing their concern over the use of nuclear power plants, and the possible construction of one near Cedar Rapids, Iowa.

Since I am not informed of the guidelines used by AEC in siting nuclear reactors, I would be most appreciative if you could suggest a reply to this correspondence.

Sincerely,

Harold E. Hughes
HAROLD E. HUGHES

HEH:bjp

Enclosure

Rec'd Off. Dir. of Reg.
Date 5/5/69
Time 3:50

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U S. ATOMIC ENERGY COMM.
OFFICE OF THE
GENERAL MANAGER

April 21, 1969

The Honorable Harold E. Hughes
Senator From Iowa
Washington, D.C.

Sir:

After reading the enclosed article, the senior American government class at the Iowa Braille and Sight Saving School in Vinton, Iowa has become deeply concerned over the dangerous use of the atom as a source of power. We are concerned because the Iowa Electric Light and Power Company is promoting the building of a nuclear power plant a few miles northwest of Cedar Rapids, Iowa. Because Iowa is a tornado state, such a reactor could be very easily damaged by a tornado, which, depending on the extent of the damage, could cause very grave problems for the near by populated areas. Also, accidents could easily occur during the transfer of spent reactor cores from the reactor to storage areas and reprocessing plants. Since such materials must be stored for long periods of time, the containers in which these materials are stored are susceptible to damage by natural disasters such as earthquakes ect.

We are concerned with this matter not only locally but also nationally. We feel that people throughout the nation are concerned but do not voice their concern because they feel that their individual opinions would be ineffective. However, we believe that since you are our senator and spokesman, and are interested in the welfare of the American public, you will take action to prevent the use of the atom as a source of power until a way can be found to eliminate the possible dangers.

As you are our senator, we felt that we should write to you first concerning this matter. However, we are willing to send letters to other prominent senators and representatives if you feel it advisable. We hope you will answer this letter and advise us as to what action you will take and as to how we should proceed in this matter. We sincerely appreciate your cooperation.

IOWA MAILLE AND SIGHT SAVING SCHOOL

VINTON, IOWA

Yours very truly,

Senior American Government Class

A most concerned and apprehensive
senior American government class

Call Safe Atom A Myth

Nuclear power will soon be a reality in Iowa, with several plants near the state borders and another planned near Cedar Rapids. Little has been said publicly about the possible dangers of such plants. The following article, which details these dangers, has been excerpted from the magazine, *Natural History*, published by the Museum of Natural History in New York.

By Richard Curtis and Elizabeth Hogan

The belief is widespread that the nuclear reactors being built to generate electricity for our cities are safe, reliable, and pollution-free. But a rapidly growing number of physicists, biologists, engineers, public health officials, and even staff members of the Atomic Energy Commission itself have been expressing serious misgivings about the planned proliferation of nuclear power plants. In fact, some have indicated that nuclear power represents the gravest pollution threat yet to our environment.

As of June, 1968, 15 commercial nuclear power plants were operating or operable within the United States, producing about one per cent of our current electrical output. The government, however, has been promoting a plan by which half of our electric power will be generated by the atom by the year 2000. To meet this goal, 87 more plants are under construction or on the drawing boards. Although atomic power and reactor technology are still imperfect sciences, these reactors are going up in close proximity to heavy population concentrations. Most of them will be of a size never previously attempted by scientists and engineers. They are, in effect, gigantic nuclear experiments.

Radioactive Materials

Atomic reactors are designed to use the tremendous heat generated by splitting atoms.

Unfortunately, however, heat is not the only form of energy produced by atomic fission. Another is radioactivity.

Some of the fission by-products have been described as a million to a billion times more toxic than any known industrial chemical.

Because the intense radioactivity in a reactor core eventually interferes with the fuel's efficiency, the spent fuel assemblies must be removed from time to time and replaced. The old ones are transported to reprocessing plants where the contaminants are separated from the salvageable fuel as well as from plutonium, a valuable by-product.

Since no satisfactory means has been found for neutralizing the radioactive liquid containing the contaminants, it must be stored until it is no longer dangerous. Thus, reprocessing plants and storage areas are immense repositories of "hot" and "dirty" material. Furthermore, routes between nuclear power plants and the reprocessing facility carry traffic bearing high quantities of such material.

Even from this glimpse it will be apparent that public and environmental safety depend on the flawless containment of radioactivity every step of the way. For, owing to the incredible potency of fission products, even the slightest leakage is harmful and a massive release would be catastrophic.

The fundamental question, then, is how heavily can we rely on human wisdom, care, and engineering to hold this peril under absolute control?

Abundant evidence points to the conclusion that we cannot rely on it at all.

Nuclear physicists assure us that reactors cannot explode like atomic bombs because the complex apparatus for detonating an atomic warhead is absent. This fact, however, is of little consolation when it is realized that only a conventional explosion, which ruptures the reactor structure, could produce havoc on a scale eclipsing any industrial accident on record or any single act of war, including the atomic destruction of Hiroshima or Nagasaki.

Numerous Ways

There are numerous ways in which such an explosion can take place in a reactor. For example, liquid sodium, which is used in some reactors as a coolant, is a devilishly tricky

