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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 12 1980

Ms. Linn W. Brucker
3404 Maltche Drive
Columbus, Georgia 31907

Dear Ms. Brucker:

This is in reply to your letter of March 6, 1980, to President Carter about nuclear power plants.

Enclosed for your information is a statement of December 7, 1979, by the President on the Kemeny Commission Report on Three Mile Island.

The Nuclear Regulatory Commission is committed to protect the public health and safety. The Three Mile Island accident resulted in a need for changes in the approach to safety. The Nuclear Regulatory Commission has found that actions recommended by its own staff and by the President's Commission on the Accident at Three Mile Island in the areas of human factors, operational safety, emergency planning, nuclear power plant design and siting, health effects, and public information are necessary and feasible. Interim measures have been taken and other actions will follow.

With regard to your question about venting radioactive gas in the damaged reactor at Three Mile Island, you may be interested in the enclosed excerpt from NRC Report NUREG-0662 on "Environmental Assessment for Decontamination of the Three Mile Island Unit 2 Reactor Building Atmosphere," March 1980.

As to your question about the nuclear plant at Savannah River, we have no information that it is leaking. This is a plant of the Department of Energy and not one licensed by the Nuclear Regulatory Commission.

In connection with your question about decommissioning nuclear power plants, you may be interested in the enclosed excerpt from NRC Report NUREG/CR-0130 on "Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station," June 1978.

I trust that you will find this information helpful.

Sincerely,

Harold Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosure:
As stated

FOR IMMEDIATE RELEASE DECEMBER 7, 1979

OFFICE OF THE WHITE HOUSE PRESS SECRETARY

THE WHITE HOUSE

STATEMENT BY THE PRESIDENT ON THE KEMENY COMMISSION REPORT ON THREE MILE ISLAND

Room 450, Old Executive Office Building

(AT 2:45 P.M. EST)

THE PRESIDENT: The purpose of this brief statment this afternoon is to outline to you and to the public, both in this country and in other nations of the world, my own assessment of the Kemeny Report recommendations on the Three Mile Island accident and I would like to add, of course, in the presentation some thoughts and actions of my own.

I have reviewed the report of the Commission, which I established to investigate the accident at the Three Mile Island nuclear power plant. The Commission, headed by Dr. John Kemeny, found very serious shortcomings in the way that both the Government and the utility industry regulate and manage nuclear power.

The steps that I am taking today will help to assure that nuclear power plants are operated safely. Safety, as it always has been and will remain, is my top priority. As I have said before, in this country nuclear power is an energy source of last resort. By this I meant that as we reach our goals on conservation, on the direct use of coal, on development of solar power and synthetic fuels, and enhanced production of American oil and natural gas, as we reach those goals, then we can minimize our reliance on nuclear power.

Many of our foreign allies must place much greater reliance than we do on nuclear power, because they do not have the vast natural resources that give us so many alternatives. We must get on with the job of developing alternative energy resources and we must also pass, in order to do this, the legislation that I have proposed to the Congress, making an effort at every level of society to conserve energy. To conserve energy and to develop energy resources in our country are the two basic answers for which we are seeking. But we cannot shut the door on nuclear power for the United States.

The recent events in Iran have shown us the clear stark dangers that excessive dependence on imported oil holds for our nation. We must make every effort to lead this country to energy security. Every domestic energy source, including nuclear power, is critical if we are to be free as a country from our present over-dependence on unstable and uncertain sources of high priced foreign oil.

We do not have the luxury of abandoning nuclear power or imposing a lengthy moratorium on its further use. A nuclear power plant can displace 35,000 barrels of oil per day, or roughly 13 million barrels of oil per year. We must take every possible step to increase the safety of nuclear power production. I agree fully with the letter and the spirit and the intent of the Kemeny Commission recommendations, some of which are within my own power to implement, others of which rely on the Nuclear Regulatory Commission, or the NRC, or the utility industry itself.

To get the Government's own house in order I will take

(OVER)

several steps. First, I will send to the Congress a reorganization plan to strengthen the role of the Chairman of the NRC, to clarify assignment of authority and responsibility and provide this person with the power to act on a daily basis as a chief executive officer, with authority to put needed safety requirements in place and to implement better procedures. The Chairman must be able to select key personnel and to act on behalf of the Commission during any emergency.

Second, I intend to appoint a new Chairperson of the Nuclear Regulatory Commission, someone from outside that agency, in the spirit of the Kemeny Commission recommendation. In the meantime, I have asked Commissioner Ahearne, now on the NRC, to serve as the Chairman. Mr. Ahearne will stress safety and the prompt implementation of the needed reforms.

In addition, I will establish an independent advisory committee to help keep me and the public of the United States informed of the progress of the NRC and the industry in achieving and in making clear the recommendations that nuclear power will be safer.

Third, I am transferring responsibility to the Federal Emergency Management Agency, the FEMA, to head up all off-site emergency activities, and to complete a thorough review of emergency plans in all the states of our country with operating nuclear reactors by June, 1980.

Fourth, I have directed the Nuclear Regulatory Commission and the other agencies of the Government to accelerate our program to place a resident Federal inspector at every reactor site.

Fifth, I am asking all relevant Government agencies to implement virtually all of the other recommendations of the Kemeny Commission. I believe there were 44 in all. A detailed factsheet is being issued to the public and a more extended briefing will be given to the press this afternoon.

With clear leadership and improved organization, the Executive Branch of Government and the NRC will be better able to act quickly on the crucial issues of improved training and standards, safety procedures, and the other Kemeny Commission recommendations. But responsibility to make nuclear power safer does not stop with the Federal Government. In fact, the primary day by day responsibility for safety rests with utility company management and with suppliers of nuclear equipment. There is no substitute for technically qualified and committed people working on the construction, the operation, and the inspection of nuclear power plants.

Personal responsibility must be stressed. Some one person must always be designated as in charge, both at the corporate level and also at the power plant site. The industry owes it to the American people to strengthen its commitment to safety.

I call on the utilities to implement the following changes; first, building on the steps already taken, the industry must organize itself to develop enhanced standards for safe design, operation, and construction of plants; second, the nuclear industry must work together to develop and to maintain in operation a comprehensive training, examination, and evaluation program for operators and for supervisors. This training program must pass muster with the NRC through accreditation of the training programs to be established.

Third, control rooms in nuclear power plants must be modernized, standardized, and simplified as much as possible, to permit

better informed decision-making among regular operating hours and, of course, during emergencies.

I challenge our utility companies to bend every effort to improve the safety of nuclear power.

Finally, I would like to discuss how we manage this transition period during which the Kemeny recommendations are being implemented. There are a number of new nuclear plants now awaiting operating licenses or construction permits. Under law, the Nuclear Regulatory Commission is an independent agency. Licensing decisions rest with the Nuclear Regulatory Commission, and as the Kemeny Commission noted, it has the authority to proceed with licensing these plants on a case by case basis, which may be used as circumstances surrounding a plant or its application dictate.

The NRC has indicated, however, that it will pause in issuing any new licenses and construction permits in order to devote its full attention to putting its own house in order and tightening up safety requirements. I endorse this approach which the NRC has adopted, but I urge the NRC to complete its work as quickly as possible and in no event later than six months from today. Once we have instituted the necessary reforms to assure safety, we must resume the licensing process promptly so that the new plants we need to reduce our dependence on foreign oil can be built and operated.

The steps I am announcing today will help to insure the safety of nuclear plants. Nuclear power does have a future in the United States. It is an option that we must keep open. I will join with the utilities and their suppliers, the Nuclear Regulatory Commission, the executive departments and agencies of the Federal Government, and also the state and local governments to assure that the future is a safe one.

Now Dr. Frank Press, Stu Eizenstat, and John Deutsch will be glad to answer your questions about these decisions and about nuclear power and the future of it in our country. Frank?

END (AT 3:00 P.M. EST)

NUREG-0662

Environmental Assessment for Decontamination of the Three Mile Island Unit 2 Reactor Building Atmosphere

Draft NRC Staff Report
For Public Comment

Manuscript Completed: March 1980
Date Published: March 1980

TMI Support Staff
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

EXCERPT

1.0 Summary and Recommendations

The krypton-85 (Kr-85) released to the reactor building during the accident at TMI-2 must be removed from the reactor building in order to permit greater access to the building than is currently possible. The gases currently in the building emit sufficient radiation (1.2 rem/hr total body, 150 rad/hr skin dose) that occupation of the reactor building is severely limited even with protective clothing. Greater access is likely to be necessary to maintain instrumentation and equipment required to keep the reactor in a safe shutdown condition. In addition greater access would facilitate the gathering of data needed for planning the building decontamination program. An additional consideration is that prolonged enclosure of the Kr-85 within the building greatly increases the risk of its successive uncontrolled releases to the outside environment.

The staff's evaluation of alternative methods for removing the krypton shows that each could be implemented with little risk to the health and safety of the public. The reactor building purge system, charcoal adsorption system, gas compression, selective absorption process system, and cryogenic processing system could each be operated to keep levels of airborne radioactive materials to unrestricted areas in compliance with the requirements of 10 CFR Part 20 (Ref. 1), and the design objectives of Appendix I to 10 CFR Part 50 of the Commission's regulations (Ref. 2), and with the applicable requirements of 40 CFR Part 190.10 (Ref. 3).

Table 1.1 shows the environmental impact of each alternative for removing the Kr-85 from the reactor building atmosphere.

Because the integrity and operability of components within (and part of) the reactor building are important to continued safe shutdown and inhibiting future radioactive releases to the environment, one of the most important factors in any decontamination option is the time required for its implementation. The Kr-85 in the reactor building has prevented maintenance of internal reactor-building components for about a year. All options for removal of the Kr-85 to allow access to the reactor building, except for the purge option, would require at least 1-1/2 additional years to implement. This time would be required for design and procurement, installation, testing, and operation of new systems.

The alternative of purging the reactor building atmosphere through the hydrogen control system is clearly the most expeditious method available for removing the krypton. It also results in the greatest environmental impact in terms of public dose during normal operations, even though such doses are well within applicable regulations (Refs. 1, 2). The other alternatives take much longer to implement and also require either long-term storage of large quantities of charcoal containing Kr-85 or long-term storage of large quantities of pressurized Kr-85 gas in piping or vessels. Inherent in these storage methods is the risk of subsequent accidental releases of the krypton due to either failure of the storage containers or operator error.

Table 1.2 summarizes the advantages and disadvantages of each of the alternative methods evaluated for removing the krypton from the reactor building atmosphere.

The staff is fully aware of the public sentiment against the planned or accidental release of any further radioactive materials from TMI-2, regardless of how small the dose consequences are suspected to be. Particular concern has been expressed against purging the Kr-85. However, based on past experience, it is likely that future accidental releases or operational incidents will occur if storage is continued. The possiblity of future accidental releases is also increased by continued reliance on unmaintained equipment. The staff therefore believes that a balance must be struck between the impact of a onetime preplanned release of krypton (and its additional benefits of allowing component maintenance inside the reactor building and the cleanup process) versus the impact of one or more accidental smaller releases while storing the Kr-85 for 1-1/2 years or more for subsequent low-impact processing (and its negative effect of precluding significant work inside of the building during this period). The staff is unable to determine that the cumulative psychological stress resulting from the threat or actual occurrence of one or more minor releases over a 1-1/2 year period is not more significant than the stress that would result from a single larger but preplanned krypton release.

With all of the above considerations in mind, the staff recommends that purging of the reactor building atmosphere to the environment be selected as the decontamination option for disposal of the Kr-85.

Based on our estimate of doses to the public from releases during the decontamination of the reactor building atmosphere by purging through the hydrogen control system, and our estimate of occupational dose, the staff concludes that this action does not constitute a significant environmental impact and that the environmental impacts for each of the alternative methods would be less than those considered in the TMI Final Environmental Statement (Ref. 4). The staff concludes that the health and safety of the public will not be endangered by operation of the system in the proposed manner and that such activities can and will be conducted in full compliance with the Commission's regulations (Refs. 1, 2). Accordingly, the staff does not propose to prepare a separate Environmental Impact Statement on this action.

In accordance with the Commission's Nov. 21, 1979, "Statement of Policy and Notice of Intent to Prepare a Programmatic Environmental Impact Statement" (see Appendix A), this staff Environmental Assessment is being submitted to the Commission for their review and discussion. In addition, the President's Council on Environmental Quality (CEQ) is being consulted on this. Comments are also being solicited from the public.

Table 1.1

Environmental Impacts of Alternatives for Removing the Krypton-85 from the Reactor Building Atmosphere

Method	Total Offsite Dose to Maximum Exposed Individual Normal Processing	 Accidents	Occupational Exposures
Reactor Building Purge	Beta skin dose - 11 mrem Total body gamma dose - 0.2 mrem	Beta skin dose - 25 mrem Total body gamma dose - 0.3 mrem	1.3 person-rem
Charcoal Absorption Systems	Less than Cryogenic Processing System	Ambient Charcoal System Beta skin dose - 41 mrem Total body gamma dose - 0.5 mrem Refrigerated Charcoal System Beta skin dose - 124 mrem Total body gamma dose - 1.5 mrem	47 person-rem
Gas Compression System	Less than Cryogenic Processing System	Beta skin dose - 410 mrem Total body gamma dose - 5 mrem	42 person-rem
Cryogenic Processing System	Beta skin dose - 0.01 mrem Total Body Gamma dose - less than 0.0002 mrem	Beta skin dose - 1700 mrem Total body gamma dose - 20 mrem	137-255 person-rem
Selective Absorption Process System	Less than Cryogenic Processing System	Absorption Process Beta skin dose - 6 mrem Total body gamma dose - 0.1 mrem Gas Storage Beta skin dose - 1700 mrem Total body gamma dose - 20 mrem	45 person-rem

Table 1.2

Comparison Among Alternatives for Removing the Krypton from the Reactor Building Atmosphere

Method	Advantages	Disadvantages	Estimated Installation Cost
Reactor Building Purge	. Immediately available for use . Noncomplex system . Known technology . No further uncontrolled releases after purging . No requirement for long term storage and surveillance of Kr-85	. Beta skin dose - 11 mrem Total body gamma dose - 0.2 mrem . Stress considerations associated with release	$75,000 (licensee estimate)
Charcoal Adsorption	. Offsite dose effects less than Cryogenic Processing System . Known technology . Ambient Charcoal System - noncomplex system	. 2-4 year delay . Long-term storage and surveillance of Kr-85 in large volume of charcoal . Possible future uncontrolled releases of Kr-85. . Refrigerated Charcoal System - complex system	$120-160 million (licensee estimate)
Gas Compression System	. Offsite dose effects less than Cryogenic Processing System . Known technology . Noncomplex system, but under pressure	. 2-4 year delay . Long-term storage and surveillance of Kr-85 under pressure . Possible future uncontrolled releases of Kr-85.	$50-75 million (licensee estimate)
Cryogenic Processing System	. Beta skin dose - 0.01 mrem . Total body gamma dose - 0.0002 mrem . Known technology	. 20-30 month delay . Complex system. . Long-term storage and surveillance of Kr-85 . Possible future uncontrolled releases of Kr-85.	$10-15 million (licensee estimate)

Table 1.2 (Continued)

Method	Advantages	Disadvantages	Estimated Installation Cost
Selective Absorption Process System	. Offsite dose effects less than Cryogenic Processing System	. 2-4 year delay . Process has only operated on small scale units. . Complex system. . Long-term storage and surveillance of Kr-85. . Possible future uncontrolled releases of Kr-85.	$4-10 million (staff estimate)

NUREG/CR-0130
Vol. 1

TECHNOLOGY, SAFETY AND COSTS OF DECOMMISSIONING A REFERENCE PRESSURIZED WATER REACTOR POWER STATION

EXCERPT

R. I. Smith G. J. Konzek
W. E. Kennedy, Jr.

Manuscript Completed: May 1978
Date Published: June 1978

Battelle Pacific Northwest Laboratory
Battelle Boulevard
Richland, WA 99352

Division of Engineering Standards
Office of Standards Development
U. S. Nuclear Regulatory Commission
Under FIN No. B21178

ABSTRACT

Safety and cost information was developed for the conceptual decommissioning of a large [1175 MW(e)] pressurized water reactor (PWR) power station. Two approaches to decommissioning, Immediate Dismantlement and Safe Storage With Deferred Dismantlement, were studied to obtain comparisons between costs, occupational radiation doses, potential radiation dose to the public, and other safety impacts.

Immediate Dismantlement was estimated to require about six years to complete, including two years of planning and preparation prior to final reactor shutdown, at a cost of $42 million, and accumulated occupational radiation dose, excluding transport operations, of about 1200 man-rem.

Preparations for Safe Storage were estimated to require about three years to complete, including 1-1/2 years for planning and preparation prior to final reactor shutdown, at a cost of $13 million and an accumulated occupational radiation dose of about 420 man-rem. The cost of continuing care during the Safe Storage period was estimated to be about $80 thousand annually. Accumulated occupational radiation dose during the Safe Storage period was estimated to range from about 10 man-rem for the first 10 years to about 14 man-rem after 30 years or more.

The cost of decommissioning by Safe Storage with Deferred Dismantlement was estimated to be slightly higher than Immediate Dismantlement. Cost reductions resulting from reduced volumes of radioactive material for disposal, due to the decay of the radioactive containments during the deferment period, are offset by the accumulated costs of surveillance and maintenance during the Safe Storage period. All costs are given in terms of constant 1978 dollars.

The decommissioning by permanent entombment of a PWR that had been operated for 20 to 30 years or more was found to be unsatisfactory because: 1) the radiation dose rates from the long-lived radionuclides ^{59}Ni and ^{94}Nb in the activated reactor vessel internals remain well above unrestricted release levels for a period of time far exceeding the known lifetime of any man-made structure, and 2) permanent entombment results in the proliferation of sites permanently committed to the containment of radioactive materials.

The principal incentive for deferring dismantlement comes from the reduction of radiation exposure that can be achieved. Compared with Immediate Dismantlement, deferral for 10 years reduced the estimated total radiation dose by about 40%; for 30 years, by more than 60%. Deferral of dismantlement beyond 30 years does not produce a significant further reduction in total radiation dose since most of the exposure is accumulated during the preparation for Safe Storage, rather than during Deferred Dismantlement.

The safety impacts of the decommissioning operations on the public were found to be small, compared with those of the operating power station. The principal impact on the public is the radiation dose resulting from the transport of radioactive materials to a disposal site.

NRC

3404 Malatche Drive
Columbus, Georgia 31907
March 6, 1980

President Jimmy Carter
Pennsylvania Avenue
Washington, D.C.

Dear Mr. President:

Yesterday I attended a lecture on campus dealing with nuclear power. The speaker was Helen Caldicott who is the author of "Nuclear Madness" and the main focus of her talk was the accident at Three Mile Island. When I came out of the session, ~~I was frightened and mad:~~ frightened because we came within 30 minutes of a holocaust; and mad because I believed you when you said everything was OK with nuclear power. To follow that up, I listened to Mr. Adhern (head of the nuclear registration commission?) this morning of "Good Morning America" and to my way of thinking, he substanciated much of what Mrs. Caldicott was saying.

So the bottom line is there is an election this November and I want to know the truth about nuclear power before I VOTE. I WILL NOT VOTE FOR YOU AGAIN (infact I will work against you) unless you change your stand regarding nuclear power or you make me a believer. I live one hr. from your home in Plains. Perhaps you might come to my home and answer a few questions:

1. How are they going to vent the contaminated gas that is trapped in the damaged reactor at Three Mile Island without contaminating the environment?
2. Is the nuclear plant at Savanah, Georgia leaking?
3. How can we continue to build new plants when we don't even know how to decommission the old ones?

The thing that frustrates me most is that this letter will be answered by some FLUNKIE on your staff and you will not be sble to respond to these very real concerns that I have or even be aware that I expressed them. I understand that the President of the United States is an extremely busy man to say the least but I also understand that as President, you have a responsibility to me as a citizen. I dare you to make a nuclear power believer out of me!

Sincerely,

Linn W. Brucker