

WILLIAM J. HUGHES  
20 DISTRICT, NEW JERSEY

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May 29, 1979

Mr. Joseph M. Hendrie  
Chairman  
Nuclear Regulatory Commission  
Washington, D. C. 20555

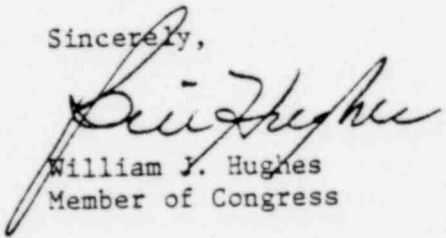
Dear Mr. Chairman:

I have recently been contacted by one of my constituents, a Freeholder in Ocean County, New Jersey, with respect to the adequacy of safety systems at the Oyster Creek Nuclear Generating Station.

I am enclosing, for your use and information, a copy of the correspondence I received. I would very much appreciate your looking into the matters raised in Mr. Gasser's letter, and providing me with any thoughts or observations you might have on this matter.

With kind personal regards.

Sincerely,

  
William J. Hughes  
Member of Congress

WJH:ems  
Enclosure

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# THE BOARD OF CHOSEN FREEHOLDERS

Ocean County  
Toms River, New Jersey  
08753

Robert A. Gasser  
Freeholder

244-2121  
Ext. 420



May 22, 1979

Congressman William J. Hughes  
Cannon House Office Building #327  
Washington, D. C. 20510

Dear Congressman Hughes:

This letter will confirm our conversation of Friday concerning the failure of JCP&L Co. to install a safety device, namely a recirculating pump trip, required of it by the N.R.C. The entire episode began approximately two years ago when then Assemblyman Peter Shapiro "leaked" the results of a study being done for the D.E.P. by a Mr. P.R. Davis who stated in his advance re-findings that the possibility of an accident at Oyster Creek was 100 to 1. Not particularly encouraged by the poor odds, I took it upon myself to write to Mr. Davis and ask him for his findings and conclusions. After much effort, I finally received a letter from Mr. Davis which stated that the odds were actually 1,000 to 1 based upon the installation at the plant of the recirculating pump trip.

I naively assumed that that would be installed under the supervision of the N.R.C. or by the D.E.P. for whom the study was made. Shortly after the 3-Mile accident, I read a report in the newspaper by Dr. Glen Paulson of the D.E.P. in which he stated that he was satisfied with the safety of Oyster Creek in reliance upon a study made by the D.E.P. of its safety. I was disturbed by that statement and wrote to Mr. Paulson citing to him the findings of Mr. Davis and questioned the installation of the recirculation pump trip. To date I have not received a reply from Mr. Paulson although I have followed up that letter in the last week or two.

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Congressman William J. Hughes

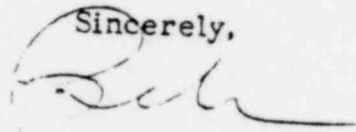
Page 2

May 22, 1979

Within the month, Oyster Creek has been shut down with a severe problem in its cooling devise. In speaking with a reporter from the Asbury Park Press who covered that well-publicized event in the Asbury Park Press dated May 11, 1979, it was determined that the recirculating pump trip had not, in fact, been installed nor had the procedures ordered by the N.R.C. and agreed to in the Spring of 1978 by G.P.U. been implemented and put into effect. I attach to this letter my notes to substantiate this event and would hope that you would seek, on behalf of my constituents, an answer from the N.R.C. of why they did not see fit to require and insure that G.P.U. would, in fact, actually install this device so that the odds could be 1,000 to 1 instead of 100 to 1.

Your continued help in this regard is greatly appreciated by me.

Sincerely,



ROBERT A. GASSER

RAG:rdv

1034 019

P. R. Davis  
1935 Sabin Drive  
Idaho Falls, Idaho 83401

Robert A. Gasser, Freeholder  
Board of Chosen Freeholders  
Ocean County  
Toms River, New Jersey 08753

Dear Mr. Gasser

This is in response to your letter to me dated May 17, 1977 in which you ask a number of questions related to the safety of nuclear power, specifically regarding my accident analysis of the Oyster Creek plant. I appreciate your interest in this matter. I hope I can clear up some of the confusion that undoubtedly exists relative to my Oyster Creek analysis.

My rough first draft report, which was unfortunately "leaked" to the public by Assemblyman Shapiro, did contain a preliminary conclusion stating that the odds of a core meltdown accident in the Oyster Creek reactor were 100 to 1 over its remaining 30 year operating life. This first draft was given a very restricted distribution for technical review and comment to knowledgeable people in the nuclear field (not all of whom were associated with the pro-nuclear establishment). The purpose of this distribution was to obtain input from appropriate individuals and organizations relative to the validity of the analysis. Due to the limited time I had available to do the study and the limited resources which could be supplied by the state, Dr. Glenn Paulson (the Assistant Commissioner for Science in the New Jersey Department of Environmental Protection) and I agreed that such a peer review would be mandatory to help assure that all relevant and definitive technical information had been included in the study. We do not know how Mr. Shapiro obtained a copy of the report, given the extremely limited circulation of the first draft.

Following my completion of the first draft, two sets of information were obtained which subsequently led me to conclude that the odds of a core melt accident in Oyster Creek were lower than those quoted in the first draft. First, it was pointed out by GPU Corporation (the company which controls Jersey Central Power and Light, the owner/operator of Oyster Creek) that I had neglected to account for the fact that the Oyster Creek plant contains certain pressure relief capability substantially greater than that included in the Peach Bottom reactor used as the basis for boiling water reactor risks in the Rasmussen Study (WASH-1400). Since I had used the WASH-1400 results as the basis for the Oyster Creek accident probabilities (with modifications which I believed appropriate), my result, according to GPU, was not valid. I have since verified that indeed the Oyster Creek plant does have substantially greater pressure relief capacity than the WASH-1400 analysis assumed. Furthermore, this greater pressure relief capacity would act as an effective mitigating feature, reducing the probability of a core melt accident. Second, the

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June 27, 1977

2 Nuclear Regulatory Commission issued a letter to GPU requiring than an automatic recirculating pump switch be installed on the Oyster Creek plant. This feature, which was included in the Peach Bottom reactor analyzed in WASH-1400, would also effectively reduce the core melt probability in Oyster Creek after its installation. It is my understanding that GPU has committed to install this device next spring.

The net result of these two considerations was to reduce the core melt probability in Oyster Creek to a value of about 1 in 30,000 per year, which is the conclusion in the final draft of my report. (This would be equivalent to a core melt probability of about 1 in 1,000 over the remaining 30 year life of the plant if the annual probability remains constant.) These two changes, plus other less significant ones, are fully explained in the final draft of my report, which I believe you have previously received directly from Dr. Paulson.

I agree completely with your belief that the state should provide surveillance activities for nuclear plants within its borders. The NRC does a reasonable job in this area, but they are spread quite thin. I have believed for some years that nuclear power can be made safe only if continuous, competent, and objective surveillance is supplied for all aspects of the industry. Some of this is underway at present, but more can and should be done. Recent proposed intentions by NRC to upgrade and intensify their nuclear power plant surveillance activities are gratifying in this regard, but I believe the states should augment and supplement some of these activities.

Regarding the article you enclosed dealing with alleged shortcomings of the Rasmussen Study, I cannot make a substantive evaluation since the allegations are very general and not supported with specific technical detail. I can assure that the study has been carefully scrutinized by over 100 groups and individuals throughout the country. I myself directed a very extensive review of the Study for the U.S. Environmental Protection Agency, and although we found many errors and omissions, we could find very few deficiencies which would tend to significantly alter the final result. (Some of these deficiencies would tend to lower the risks.) It is easy to find problems and questionable analyses in the Study, but these shortcomings must be shown to be quantitatively significant before the end results can be claimed invalid.

If you have further questions on the report, or on information contained in this letter, do not hesitate to contact me.

Sincerely,

  
P. R. Davis

1034 021



# Oyster Creek's Shutdown Linked to Safety Changes

POOR ORIGINAL

By TIM BLAGG  
Press Staff Writer

LACEY TOWNSHIP — Operating records of the Oyster Creek nuclear plant indicate that the forced shutdown on May 2 — and the resulting drop in the level of reactor cooling water — may have been aggravated by changes designed to make the plant safer.

During the incident, the water level inside the reactor vessel, necessary to cool the nuclear core even after the fission process has been shut down, dropped from its normal 13 to 14 feet to between one and two feet.

According to testimony Wednesday at an NRC meeting in Washington, plant operators were following a procedure written by JCP&L, which prevented a problem that has plagued the plant since it was built.

But recent changes in the plant's automatic safety equipment may have made the procedure obsolete.

Because the operators followed the obsolete procedure, engineers present at the meeting speculated, the water level in the reactor dropped lower than it has in the 10-year history of the plant.

Plant operators also were misled by instruments which gave them a distorted view of the situation inside the reactor. They ignored an alarm which warned them of the rapid drop, believing the water level was normal until some 30 minutes after the original shutdown.

According to the theory advanced Wednesday, the trouble actually started back in 1971. Following a forced shutdown, or "scram," in September of that year, operators were using the plant's two isolation condensers to cool down the reactor.

These two large radiator-like devices each hold 22,000 gallons of water, and are designed to cool steam coming from the hot core of the reactor and turn it back into water.

The water flows back down into the reactor, while some of the condensers' water is turned into steam and vented outside the plant.

But the operators had no sooner activated the condensers when they received an alarm which signaled a break in the pipes leading to the condenser.

Since the alarm automatically shuts off the condenser, they were forced to outwit the automatic circuitry by resetting it each time the rupture alarm sounded.

Subsequent analysis showed that a flow of water from two of the plant recirculation pumps around the reactor was causing the alarm.

Experiments in changing alarm settings failed to keep the problem from repeating in 1977 and again last year.

Finally, operators were told to manually

## Analysis

shut the 26-inch valves to two of the five recirculation pumps before using the condensers.

Meanwhile, the NRC, working on an entirely different problem, decided to require plants like Oyster Creek to incorporate an automatic feature known as a "recirculation pump trip."

The feature, part of the automatic safety circuitry, would turn off power to the five pumps in certain situations.

Because the pumps were not to keep running, shutting their valves became unnecessary. JCP&L never changed its procedure, however.

Thus, when the reactor shut down May 2, operators closed the valves. But, for unknown reasons, they shut not two, but four valves.

Since the fifth valve already had been shut to allow maintenance on that pump, this left no easy way for the water from the condensers to get back into the core.

Only five small (two-inch diameter) valves allowed water to flow into the core. Since steam was still flowing from the top of the reactor vessel, the water level apparently dropped until it reached equilibrium, somewhere between one and two feet above the fuel rods.

Had the rods been uncovered, the intense heat generated by the radioactive decay going on inside them could have caused them to split, releasing radioactive particles and gases into the cooling water.

At about 2,000 degrees, the metal of the rods would begin to react chemically with the water and steam around them, releasing hydrogen, much like happened at the Three Mile Island accident in March.

Experts generally agree that no hydrogen bubble would have formed, however, due to the differences between Three Mile Island's pressurized water reactor and Oyster Creek's boiling water reactor.

But the radiation released from the split rods at the very least would have increased the radiation throughout the plant, necessitating an expensive cleanup. It could possibly have resulted in the release of abnormal amounts of radiation from the plant.

Should the rods become hot enough to melt, experts believe they could slump in a molten mass to the bottom of the reactor and even melt through the bottom of the steel and concrete structures surrounding them, causing a major accident.

The incident on May 2 was exacerbated by the lack of one of two auxiliary power transformers. Because one of the transformers was out of service at the time of the accident, two feedwater pumps which normally would have supplied water to the reactor were not working.

A third pump, which was designed to run on electricity supplied by the transformer which was working, failed because of an oil pump problem.

One emergency diesel generator started,

But it is designed to power only the emergency core cooling system, which was never activated by the operators.

One nuclear safety expert believes the Oyster Creek incident is a good example of the weaknesses inherent in the relationship between the nuclear power industry and the NRC.

Robert Pollard, who resigned from the Nuclear Regulatory Agency staff and now works for the Union of Concerned Scientists, believes that "This was just another example of the disservice being done the public by the NRC and the (nuclear) industry by continually assuring the public that nuclear power plants are safe because of the multiple layers of safety systems."

"Because they allow the plants to operate with safety systems out of service, they eliminate the designed redundancy."

"This incident (at Oyster Creek) is not unique at all...there have been a series of loss of coolant episodes at boiling water plants, just as there were a series of pressure excursions at pressurized water plants like Three Mile Island before that happened."

"These should be considered warnings."

Pollard says some experts think plants should be designed to handle situations like that of May 2 automatically.

"The operators should just sit back and monitor the equipment for the first 10 minutes or so," he suggested. "Things happen too quickly for humans to cope."

Pollard recalled a letter sent to the old Atomic Energy Commission in 1976 by a quality control specialist who was resigning. The man wrote: "I should thank even Professor Rasmussen (the author of a controversial reactor safety study) will realize that if you have a number of near-misses with a small number of reactors operating, when you go to a large number, sooner or later, you will get a hit."

The plant will not be allowed to resume operations until this weekend or later. NRC safety experts are reviewing the incident, and will keep the plant shut down until they are satisfied with the power company's measures to keep a similar incident from occurring.

One measure already taken by JCP&L, according to plant manager Donald Ross, was to install plastic covers over the recirculation pump valve controls to "force the operator to think twice" about closing the valves.

Although it was not made clear why the reactor operator closed four valves instead of two, Ross assumed some responsibility, commenting, "We may have led him down that path."

The conflicting water level readings re-

sulted from the fact that the sensors for the water level indicators in the control room are located in the reactor vessel wall, in an enclosed space around the core called the annulus.

This space is separated from the core by a circular shield. Normally, with at least one recirculation loop open, water level is the same in the core and in the annulus.

But with all loops closed, the water in the core can fall without affecting the annulus level. Thus operators used to the normal situation didn't realize that the core level had fallen so low.

When the "low low low" alarm went off, signaling that the water in the core was down to a level four feet eight inches above the fuel, they refused to believe it, twice sending an electrician to check out the circuit.