Docket File

REGULATORY DOCKET FILE COPY

Docket No. 50-335

JUN 30 1980

The Honorable Lawton Chiles
United States Senator
Federal Building
Lakeland, Florida 33801

Dear Senator Chiles:

This is in response to your letter dated May 12, 1980 to Mr. Kammerer, Director, Office of Congressional Affairs, Nuclear Regulatory Commission (NRC), regarding correspondence addressed to you from Ms. Liz Starr of Jensen Beach, Florida.

In her letter Ms. Starr voiced concern about the St. Lucie Nuclear Power Plant and problems facing nuclear power plants. Also, Ms. Starr expressed concern about living within 10 miles of the facility. And, finally, Ms. Starr expressed concern about radiation leakage and requested statistics related to her concerns.

Nuclear power plant accidents differ from those in conventional power plants because potentially significant amounts of radioactivity can be released to the environment. Large amounts of radioactivity are generated by the fission process in a nuclear power plant with about 98 percent of this radioactivity remaining in the fuel as long as the fuel is adequately cooled. For large amounts of radioactivity to be released from the fuel, it must be severely overheated and essentially melt. Consequently, the primary safety objective in nuclear power plant design is to prevent or to mitigate the consequences of the major types of nuclear power plant accidents which have a potential for releasing radioactivity to the environment.

The safety design approach for nuclear power plants consists of multi-levels of safety involving (1) the design for safety in normal operation, providing tolerances for system malfunctions, (2) the assumption that incidents will nonetheless occur and the inclusion of safety systems in a facility to minimize damage and protect the public, and (3) the provisions of additional safety systems to protect the public based on the analysis of very unlikely accidents. This safety design approach has also been described as involving the use of multiple physical barriers (e.g., fuel, fuel cladding, reactor coolant system, containment buildings) to prevent the release of radioactivity to the environment.

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As part of this safety design there are many engineered safety features provided to mitigate the consequences of a large release of radioactivity to the environment. For instance, should a break occur in the reactor coolant system and high-pressure, high temperature reactor coolant system

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water be rapidly discharged into the containment building, the engineered safety features system would actuate the emergency core cooling system which would operate to keep the reactor core cool. Any radioactivity released from the core would be largely retained in the low leakage containment building. Also, the natural deposition processes and radioactive removal systems would remove the bulk of the released radioactivity from within the containment building. In addition, heat removal systems would reduce the containment pressure, thereby reducing leaking of radioactivity to the environment.

Prior to the Three Mile Island (TMI) accident (the worst in United States nuclear power reactor history) 20 years of commercial nuclear power operation had not caused anyone to be killed or to suffer a serious physical injury. This same statement can also be made if one includes the March 28, 1979 TMI accident and events which have transpired since then.

However, the NRC, and the President's Commission on the Three Mile Island Nuclear Accident, after extensive studies, recommended that additional nuclear safety design features be incorporated in operating nuclear plants including the St. Lucie Nuclear Plant near North Stuart, Florida. Also, the NRC review of the TMI accident disclosed a number of actions in the area of design and analysis and plant operations required for public safety which have been implemented in operating nuclear power plants. These actions have been implemented at the St. Lucie Nuclear Plant and other recommendations requiring a longer period of time to complete are now underway.

An NRC approved emergency response plan with appropriate State and local plans has been in effect from the time that the St. Lucie Nuclear Plant received an operating license. However, all operating nuclear plants are being required to upgrade their emergency plans based on the lessons learned from the TMI accident. An NRC Emergency Prepardness Task Group has been organized and is visiting every nuclear reactor site in the country to evaluate upgrading emergency planning.

During the period November 6 to 8, 1979, a team from this task group visited the St. Lucie Nuclear Plant to discuss with the licensee the upgrading of the facility's emergency plan. Discussions were held with the licensee and the appropriate State and county officials (10 miles around the reactor site) to ensure that the required interfaces and proper coordination will occur between the licensee's augmented emergency plan and State and local officials. As part of this effort, a public meeting was held on November 7, 1979 at the Ramada Inn, Hutchinson Island, to address questions which the public asked regarding emergency planning. The goal in upgrading the emergency plan for St. Lucie is to ensure that the general public within a 10 mile area around the reactor will have

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early warning and clear instructions of what to do in the event of a potentially serious accident at the St. Lucie nuclear power plant.

Because of public interest in emergency planning, a specific section of the docket file for a nuclear power plant is being reserved for all information related to emergency planning, including State and Local Plans, in order to provide ready access for public information and use.

The augmented emergency plan for St. Lucie can be found in the public docket files which are available for public information at the NRC's Public Document Room at 1717 H Street, N. W., Washington, D. C., and at the Indian River Community College Library, 3209 Virginia Avenue, Ft. Pierce, Florida.

As stated earlier, the design of nuclear power plants and NRC regulations imposed on these plants are to preclude large scale releases of radioactivity to the environment. Controlled radioactive releases allowed and as specified in the St. Lucie Technical Specifications are many orders less than the natural background radiation in Florida.

Man is continually exposed to ionizing radiation which occurs naturally. There are three primary sources of this natural radiation background. These are: (1) solar and galactic cosmic radiation, (2) long lived radionuclides in the earth's crust and (3) radionuclides formed in the upper atmosphere from the interactions of cosmic radiation with gases in the atmosphere (cosmogenic radionuclides).

Natural background radioactivity varies according to latitude and altitude. The natural background radiation in the vicinity of St. Lucie is approximately 100 millirem (mrem) per year. A rem is a unit of measure of reactivity expressed as the quantity of ionizing radiation whose biological effect is equal to a standard unit of X-rays. A mrem is one one thousandth of a rem. Denver, Colorado, located at a higher altitude has a measured natural background level of 193 mrem.

After the TMI accident, a government task action group composed of technical staff members from the Environmental Protection Agency, the then Department of Health, Education and Welfare, and the NRC prepared an assessment of the radiation dose and potential health impact on the populace living within 50 miles of the reactor site at TMI. The report of this task group states the estimated dose that might have been received by an individual is less than 100 mrem. The collective dose received by the 2,164,000 people estimated to live within 50 miles of the reactor site is calculated to be 3,300 person-rem. This corresponds to an average dose of approximately 1.5 mrem.

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The potential number of fatal cancers that is projected to occur as a result of the accident at TMI is less than 1 (one). This potential impact would be undetectable compared to the 325,000 cancer deaths that would normally be expected to occur in a population of 2,164,000. The estimated total health impact, including fatal and non-fatal cancers and genetic effects to all future generations is approximately 2 (two) health effects.

A copy of this report entitled, "Population Dose and Health Impact Of The Accident At The Three Mile Island Nuclear Station," is enclosed for transmittal to Ms. Starr. Although she may not wish to read the entire report, we suggest that she read the Preface and Summary and Discussion of Findings as stated in the report. Also, the report contains statistical data which Ms. Starr may find interesting and enlightening.

I trust this information answers Ms. Starr's questions.

Sincerely,

(Signed) T. A. Rehm

for William J. Dircks, Acting
Executive Director for Operations

Enclosures:
1. Report entitled "Population Dose and Health Impact Of The Accident At The Three Mile Island Nuclear Station" (NUREG-0558)
2. Incoming Letter From Ms. Liz Starr Dated April 24, 1980

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I trust this information answers Ms. Starr's questions.

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William J. Dircks, Acting
Executive Director for Operations

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I trust this information answers Ms. Starr's questions. If you have any further questions concerning emergency planning, please contact Mr. Frank Pagano, Acting Branch Chief, Emergency Preparedness Program Office (301-492-7846).

Sincerely,

William J. Dircks
Executive Director
for Operations

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2211 Northeast Park Street
Jensen Beach, Florida 33457
April 24, 1980

Mr. Lawton Chiles
Senator Office Building
Washington, D.C. 20510

Dear Mr. Chiles:

I would like to inquire about the nuclear power plant located in North Stuart, Florida. I am very concerned about the problems we face with nuclear power.

Living within the danger point, only ten miles away, I would like to know the possibilities of a radiation leak and what to do if it does leak.

Please send me some information or statistics to relieve my insecurities on the subject.

Sincerely,

Liz Starr