UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of	)	3-1-71.
	)	
THE TOLEDO EDISON COMPANY	)	Docket No. 50-346
AND THE CLEVELAND ELECTRIC	)	
ILLUMINATING COMPANY	)	BRIEF: REGARDING CHALLENGE TO
	)	10 CFR Part 20
(Davis-Besse Nuclear Station)	)	

I. A CHALLENGE TO PART 20

Intervenor Living In a Finer Environment and William B. Reany (hereinafter LIFE) submit that the proposed Davis-Besse nuclear power station will not necessarily operate without undue risk to the Health and safety of the public even if the plant meets the safety criteria of 10 CFR Part 20 "Standards for Protection against Radiation", (hereinafter Part 20) for the reason that the Part 20 criteria themselves are inadequate. The present Part 20 sets excessively high limits for radiation exposure in certain instances and lacks precise standards to control certain important aspects of radiation exposure. Furthermore, the standards are based in part, on a misconception of the Congressional mandate to the AEC. Taken together, these facts render Part 20 outmoded and inadequate, representing an abuse of the AEC's administrative discretion to implement safety objectives.

Authority to challenge Part 20 at a construction permit hearing was established In the Matter of Baltimore Gas and Electric Company (Calvert Cliffs Nuclear Power Plant—Units 1 and 2) Docket No. 50-317-318, (hereinafter Calvert Cliffs). In that case an intervenor attacked the validity of Part 20, especially with respect to its limitations on the concentration of radioactive materials in liquid waste discharges from a nuclear power plant. The initial decision in that case, dated June 30, 1969 discussed the nature of the Intervenor's Challenge as follows:

> "The basic function of the Board is to make a finding that there is reasonable assurance that the proposed reactor may be constructed and operated without undue risk to the health and safety of the public. The

[redacted] 6

> Part 20 limits ofcourse play a central role in the question of what constitutes "undue" risk. However, it seems to the Board that there may be cases inwhich the evidance introduced is such as to draw into question tha validity of those regulations themselves. In such a case the Board might not be able to rely up on Part 20 as establishing the outer limits of acceptable risk."

This aspect of the initial decision was futher discussed in an ACE Memorandum dated August 8, 1969, which referres to the limited grounds for a licensing proceeding challenge to the validity of a Commission regulation, stating:

> "By limited grounds we mean whether it was promulgated in accordance with applicable procedural requriements; and, as respects the Commission's radiological safety standards, whether the standards established are a reasonable exercise of the broad discretion given to the Commission by the Atomic Energy Act for implementation of the statute's radiological safety objectives."

The AEC's authorizing legislation, the Atomic Energy Act of 1954, requires that the Commission assure itself that nuclear facilities will not by inimical to the health and safety of the public. 42 USCA 2133 (d). The theme of the paramount concern in protection of public health and safety recurrs throughout the legislation, eg; 42 USCA 2013 (d). 42 USCA 2201 (p) gives the Commission authority to

> "make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this chapter" (emphasis added)

In the words of the Commission itself in the Calvert Cliffs Memorandum, "Part 20 is a living document." This means that its provisions must reflect the most up-to-date scientific information available.

II. Evidence of the invalidity of Part 20.

A.) The present Part 20 represents a distorted view of the proper function of safety standards. It rests upon a misconception of the

authority to set safety standards and instead permits the factor of cost to be considered of safety criteria. Under such circumstances a reviewing court would look to the ligislative intent and the language of the statute to fulfill its

> "obligation to insure that the administrative standards conform to the legislative purpose and that they are uniformily applied in individual cases".
>
> E.D.F. v Ruckelshaus, --- F2d--- (D.C. Cir. January 7, 1971)

This Board, Like a Court, should find Part 20 an unreasonable exercise of discretion because the Commission which drafted it was

> "found to have proceeded on erroneous principles".
>
> Rochester Telephone v U.S. 307 US 125 (1939)

A standard for protection against radiation should be a safety standard , and "safety" can surely mena nothing less then "feedom from exposure to danger". (Webster's Third New International Dictionary, p.1998) The task of the AEC in Part 20, then, should have been to set maximum exposures and release limits solely on the basis of current scientific information about risk and danger, not on the basis of expense.

As an entirely separate seip in the administrative process and in the sphere of economics and technology would be the determination of the cast of building and operating facilities that meet the safety standards of Part 20. It would then be up to private enterprises to decide whether it is economically feasible to build nuclear power plants, or whether it would be cheaper per unit of electricity produced to build a fossil fuel plant .

Congress has to some extent altered the usual Market Mechanisms upon which private enterprises ordinarily depend for guidance in making the decision just described, Thus, Congress has subsidized nuclear power by assuming rusks through the Price-Anderson Act , thereby lowering the costs

of insurance to enterprises involved in nuclear power production. The Fer-eral Government also subsidizes nuclear power facilities by financing the initial fuel supply. In these ways, Congress helps the industry to be competative with other forms of power production.

Congress has not, however, made and explicit decision to subsidize nuclear power by permitting the safety standards to be minipulated so that nuclear power production will be economically feasible. Nevertheless, we submit that the AEC has done so without congressional authority. In the light of available scientific unformation, certain exposure limits should have been revised downward. (See infrapp. 36). Nor has Part 20 adequatsly recognized the fact that people will be exposed to increasingly numerous sources of radioactive emissions during the coming years and that a method of apportioning total radioactive output mist be found. It appears that these deficiencies in Part 20 stem from the interest in making nuclear power economically feasible rather than physically safe.

The ICRP, on whose recommendations all Part 20 standards are based in part, has actually stated that

> " The Commission believes that this level (of radiation emission) provides reasonable latitude for the expansion of atomic energy programs in the forseeable future". ICRP Report 9, pg. 14..

Theclearest expression of this unauthorized interpretation of its responsibility to set safety standards is found in 10CFR 20.1 (c). (35 Fed. Reg. 18387, Dec. 3, 1970.). This paragraph reads as follows:

> "In accordance with recommendations of the Federal Radiation Council, approved by the President, persons engaged in activities under licenses issued by the Atomic Energy Commission pursuant to the Atomic Energy Act of 1954, as amended, should in addition to complying with the requirements set forth in this part, make every reasonable effort to maintain radiation exposures, and releases of radioactive materials in effluents to unrestricted

> areas, as far below the limits specified in this part as practicable. The term "as far below the limits specified in this part as practicable" means as low as is practicably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and in relation to the utilisation of atomic energy in the public interest."

The words of the regulation, which explain the "purpose" of the chapter, require the agency to take into account "the state of technology and the economics of improvements" (emphasis added). On cross-examination, AEC witnesses Tedesco, Howe, and Rogers corroborated the fact that cost was considered in deciding whether radiation exposures and radioactive releases were safe enough. This is not establishing how much safety we can afford!

Even if the AEC mandate to develope uses of nuclear energy is interpreted to mean "promote", Part 20 -- meant to include only safety standards-- is not the proper vehicle for this activity. Louis Jaffe, Judicial Control of Administrative Action (1965) gives one definition of abuse of discretion an exercise of discretion in which

> " an exercise of discretion in which a relevant consideration has been given an exaggerated and 'unreasonable' weight at the expense of others. The 'letter' has been observed the 'spirit' has been violated. Discretion implies a 'balancing', where the result is eccentric either there has not been a balancing or a hidden and mayhap improper motive has been at work."

The AEC has emphasized and given an "exagerated weight" to the promotion of nuclear energy at the expense of safety.

B.) Part 20 also fails as a "reasonable exercise of the broad discretion given to the Commission by the Atomic Energy Act for implementation of the statute's radiological safety objectives" in that certain important portions of the regulation are outmoded. The frequently mentioned document at the Davis-Besse Hearings was the National Council on Radiation Protection and Measurements (NCRP) Report No. 39, "Basic Radiation Protection Criteria" (Applicant's Exhibit 8). This is the most recent publication of that body published January 15, 1971

its re-evaluation work

> "has been underway for a number of years and the general recommendations of this report have been subjected to considerable scrutiny outside the committee for the past three years."
>
> (p.V)

The scientific data on which its recommindations are based has obviously been available for some time. This is not the place for a lengthy description of the NCRP or its connections with the AEC. Some of these facts were referred to in the testimony of LIFE witness Sternglass (Tr. 3845) and AEC witness Rogers. It is evident that such an organization with its inevitable commitment to prior recommendations can not be considered lacking conservation in its approach to revisions of governmentally approved safety criteria. Nevertheless, the 1971 NCRP report recommends several significant changes from its previous guidelines upon which present Part 20 is in part based. A comparison of these recommindations with the present standards in Part 20 points up some important inadequacies in the latter.

The National Council on Radiation Protection (NCRP) Report 39, reflects the most recent findings of a corporation set up by Congress.

> "The Commission maintains close consultation, and will continue to consult, with the National Council on Radiation Protection and Measurements, and the International Commission on Radiological Protection."
>
> Fed. Reg. V. 35, No. 234, 18386

As the testimony of Dr. Tompkins on behalf of the AEC, (p. 1800-1803 Tr.) and the NCRP report Exhibit , paragraphs 234, 235, 236, 237, 238, 239, 240, 241. 245, 246, 255, and 256 indicates, the NCRP proposes certain very important changes from the existing regulations in 10CFR Part 20. And the proposed changes in NCRP Report number 29 reflect data that has been known for some time. As page V of the Report states:

> "the general recommendations of this report have been subjected to considerable scrutiny outside the committee for the past three years."

and in setting up-to-date standards they state in paragraph 17, page 6:

> "these guidelines may change frequently in the light of practical experience, availability of improved measuring methods and the complexity of competing applications involving radiation. Bodies promulgating recommendations must maintain cognizance of advances in the understanding of radiation effects so that the basic criteria may become better founded on scientific principles and less dependent on value judgement, whenever possible."

In other words, it is the NCRP's feeling that guidelines be updated as new information is gained, to protect man from unnecessary dangerous radiation effects.

One of the most important changes in the Report was the recommendation for women of reproductive capacity in the occupational category. As Dr. Tompkins points out on p. 1801-1802 of Transcript:

> "This change essentially would establish a new radiation worker category."

The exposure allowed under Part 20 makes no distinction of different classifications of workers in nuclear facilities; and Part 20 and FRC guidelines permit 5 rems per year to all workers (p. 1801-02, 1999, 2000 Tr.). The standards were set up on what was known about the adult in occupational conditions in nuclear facilities (p. 1370 Tr.).

The NCRP report, Exhibit 8, recommends that exposure to the fetus be:

> "During the entire gestation period, the maximum permissible dose equivalent to the fetus from occupational exposure of the expectant mother should not exceed 0.5 rem.

Dr. Ernest Sternglass, witness on behalf of LIFE, stated:

> "the infant, the fetus, and the early embryo, which are the most sensitive members of our population."
>
> (p. 1336 Tr.)

As Dr. Sternglass pointed out in his testimony, the first indication of an association between X-rays and leukemia and cancer in children was shown by Dr. Alice Stewart in England in 1956 (Applicant's Exhibit 14).

> "to find out why leukemia had increased in England after 1950, she had carried out a study in which she interviewed mothers and found out that among the mothers who had had diagnostic X-rays during pregnancy, there was approximately a 90 percent greater or almost twice as many cases of leukemia and cancer among their offspring as among those who had no X-rays. By 1958 she had accumulated a much larger number of cases and again her study was confirmed."
> (p. 1341 Tr.)

And the study conducted to check these conclusions verified Dr. Stewart's study as Dr. Sternglass testified:

> "Furthermore, by 1962, Dr. Brian MacMann, under sponsorship both by the Public Health Service and the Atomic Energy Commission had carried out a check study, a separate and independent study of this particular phenomena, and also concludes as a result of the study involving some 800,000 children born in New England and New York hospitals, a fraction of whom had of course received X-rays, that indeed he confirmed the indication that again there was something like a 40 to 60 percent increase or almost half as many cases of leukemia and cancer among the children that had received a few diagnostic X-rays."
> (p. 134 -42 Tr.

Since one diagnostic X-ray amounts to 200-400 millirems, the exposure levels are similar to those permitted under 10 CFR Part 20 to be given to the general population, .17mr, as Dr. Sternglass pointed out on p. 1342 of Transcript. As Dr. Sternglass stated further, Dr. Alice Stewart confirmed in more detail her findings in June, 1970 in:

> "review of some 19 million children, a fraction of whom were X-rayed over a longer period of time, approximately a decade and a half in England. Again using hospital records, she concluded: Number one, there was evidence for a direct linear relationship or a proportionality between the number of X-rays given and the chance of cancer and leukemia. Number two, she was able to arrive at the conclusion that the early embryo in the first trimester was approximately 15 times as sensitive as the late fetus to a given amount of radiation, or the risk was 15 times greater. Now, in view of the fact that her

figures established a dose to double the incidence of leukemia and cancer of about 1200 millirads for the late fetus near full-term, her conclusion amounts to the fact that the early fetus requires only about 80 millirads in the first three months of pregnancy in order to indicate a statistically significant increase or doubling of cancer and leukemia in the next 10 years of life."

(p. 1343 Tr.)

According to Dr. Sternglass' testimony this damage is caused by the fact:

"That the embryonic cells are not able to repair and resist. They have not yet acquired the ability to fight off cancer and leukemia to the same degree mature cells have."

(p. 1344-45 Tr.)

In other studies relating to fallout from nuclear weapons testing, to increased induction of cancer and leukemia in children, Dr. Sternglass stated in his testimony on LIFE's behalf:

"Early in 1964 a set of data was published by the New York State Health Department indicating rises in leukemia did indeed take place for children under 10 years of age for which data was complete and it showed a peak occurred some six or seven years after arrival of a fallout and this is similar to the peak that occurred in Hiroshima and Nagasaki six to seven years after the individuals there were exposed to radiation.

Furthermore there was a shift in age distribution such that children were dying towards older ages. Instead of dying mainly at two to three years old, leukemia seemed to be striking them at ages 5 to 10. This shift had been noticed by Dr. Alice Stewart and Dr. MacMahon for children who received X-rays in utero and again this tended to corroborate the hypothesis that we may be dealing with an effect on the children in utero, due to the radiation both externally and internally.

This particular study, while examining it further, I detected in that same area of Albany-Troy, New York, a halt in the decline of fetal mortality which happened to be going on at a steady rate since the early '30s and then suddenly within a year or so after the arrival of the fallout in Albany-Troy drastically leveled off and then began to rise again and only in the last two years has fetal mortality in all of New York had this area begun to come down again.

Then we examined infant mortality all over the United States and found that in state by state, down-wind from the testing, there was a rise and decline of infant mortality above the projected rates based on the previous 15 years history, in unison, following within a few years

after the onset of nuclear testing in the early '50s and ending dramatically within three to five years after 1962.

Or, in other words, in the last three to four years infant mortality has once again dramatically resumed its decline and in fact will of course have gone down to far lower values as for instance is shown in one of the figures that I have attached, that is, incorporated in one of the papers I referred to."

(p. 1350-57 Tr.)

Another of the NCRP criterion change was the allowable thyroid dose for occupational workers. As the report Exhibit 3 of the applicant, states in paragraph 201, page 76-77

> "The thyroid gland is most distinctly the limiting organ in cases of uptake of the various radionuclides of iodine. Because of the large use of radioiodine for various studies, and because iodine may be an important radionuclide in nuclear energy activities, both civilian and military, it is possible that the thyroid may receive relatively large doses. Irradiation of children also calls for special consideration of this gland."

As Dr. Sternglass pointed out in reference to studies conducted in the Nevada area after nuclear weapons testing,

> "By hindsight Dr. Ralph Lapp was able to calculate that infants in that area as a result of drinking the milk and other possible sources may have and probably had accumulated as much as 10 to 30 rads to their thyroids as a result of the tendency of iodine to reconcentrate in the human thyroid. He pointed out that therefore we should examine whether or not increases in various types of diseases had taken place and he specifically mentioned thyroid cancer." (Tr. 1349)

And as paragraph 115 of the NCRP Report no. 39 states:

> "Experimental evidence in animals indicates that other neoplasms may be induced by whole or partial body irradiation, but very little such evidence has been seen in studies of exposed human beings. Only in the case of thyroid tumors is the evidence more than suggestive. Recent studies of the Marshallese have shown the thyroid to be probably more sensitive than previouly considered."

The change in NCRP guidelines for this exposure reflects a quantity that is one-half the exposure allowed to reach this organ in 20.101 of 10 C F R. The new NCRP recommendation is:

> "The maximum permissible dose equivalent for combined external and internal irradiation of any tissue, organ or organ system not otherwise singled out in the other recommendations shall be 15 rems in any one year." (NCRP Report no. 39)

> "15 rems for all other organs including the thyroid" (NCRP Report no. 39)

The occupational skin dose criterion for an unlimited area of the body has also been changed by the NCRP in their Report no. 39. Section 20.101 of 10 CFR lists exposure of individual to radiation in restricted area for skin of whole body to be 7.5 rems per calendar quarter or 30 rems per year.