UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

Charlotte-Mecklenburg
Environmental Coalition,

Intervenor,

In the Matter of:

Duke Power Company, et al. (Catawba Nuclear Station, Units 1 & 2),	)	Docket Nos. 50-413 50-414

Applicants

CMEC'S REVISED CONTENTION #4

Introduction: The Board's Order admitting and rejecting the Intervenors' contentions admitted CMEC's contentions #1-3 without conditions; it admitted contention #4 conditionally. Both the Staff and the Board faulted contention #4 on the grounds that (a) #4 was not sufficiently specific, and (b) #4 ought to be directed toward the Staff's statutory NEPA obligations as fulfilled in its ES. But the DES had not issued at the time Intervenor framed his contentions. Now that the DES has issued, CMEC tries, in this document, to cure the defects in its fourth contention by (a) stating in some detail reasons why we find the DES's projections of the radiological genetic and somatic effects of CNS operations to be inadequate and (b) specifically addressing the DES analysis.

CMEC's Revised Contention #4: The methods used in the DES (NUREG-0921) for estimating somatic and genetic effects to the population that will be exposed to releases of radioactivity from CNS inadequately assess these somatic and genetic effects. ('Releases of radioactivity' includes routine releases of radioactivty into the hydrosphere and atmosphere resulting from normal plant operation and releases of the sort specified in CMEC's contentions #1 & #2.) Intervenor's objections to the DES methodologies include the following.

1. The DES (page 5-18) bases its estimations of health effects

as regards cancer mortality risks on the 'absolute-risk' model. Intervenor's position is that this method fails to take into account the time cancers take to develop after tissue irradiation and that, in failing to express risk as a percent increase in mortality rates per rad of exposure, it seriously underestimates cancer morality risk for a population continuously exposed to irradiation over a long period of time. The DES (page 5-18) takes notice of the alternative (and in the Intervenor's view, proper) 'relative risk model.' The DES suggests that the relative risk model would give risk values of up to four times those produced by its 'absolute-risk' model. However, Intervenor is prepared to show that the 'absolute-risk' method produces risk values that are lower than 'relative-risk' values by factors much greater than four and that are lower than observed mortality rates by factors much greater than four. For instance, analysis of data collected by Saccomanno indicates that the 'absolute-risk' model predicts cancer mortality rates for smoking uranium miners that are less than the observed mortality rate by a factor of 58.[1]

2. The DES does not appear to take seriously the linear hypothesis that the incidence of radiation induced cancers in an irradiated population is directly proportional to the amount of radiation sustained. For example, the DES accepts BEIR-III as authoritative;but BEIR-III rejects the linear hypothesis in favor of a combination of linear and quadratic models , a combination that had no basis in any epidemiological evidence whatsoever. (The lack of basis for BEIR--III's position was presented in a detailed dissenting discussion by Chairman Radford (BEIR-III, 1980, pages 287-314).) Statements like "The lower limit of the range (of health effects) would be zero because health effects have not been detected at doses in this dose-rate range " (DES page 5-18) suggest that Staff accepts a threshold hypothesis. But Intervenor argues that the evidence overwhelmingly supports the linear hypothesis;the linear hypothesis ought to be the basis of DES methodology in assessing radiological effects of releases from CNS.

3. DES (page 5-18) basis its risk estimates on BEIR-I, BEIR-III and UNSCEAR. We find these documents seriously defficient in methodolgy. For example BEIR-III obliterates the difference in sensitivities of young and old at irradiation; its methodology assumes without warrant the model of a ten-year latent period followed by a lifetime plateau;as we have noted above, BEIR-III rejects data on the incidence of cancer caused by irradiation of the young, without warrant,and assumes without any evidence that a combination of the linear and quadratic models should be used in its analysis. We have noted our objections to the 'absolute-risk' model used in BEIR-I. Our objections to UNSCEAR are of a similar nature. For these and other reasons, we argue that the 'risk estimator' of 135 radiation induced cancer deaths per million person-rems ought to be increased by a factor of at least 25.[2]

4. As regards genetic effects in exposed populations, DES (page 5-18) states that "Values for risk estimators range from 60-1500 potential cases of all forms of genetic disorders." DES takes this statement from BEIR-I issued in 1972. But considerable advances have taken place in radiology in the past decade;projections for genetic disorders are now much higher, e.g. Gofman's projections of a range of up to 20,000.[3] The DES, as far as we can determine, fails to address the more recent work.

DES (page 5-21) states that in respect to the low level radiation from CNS "the upper bound limits of deleterious effects are well established and amenable to standard methods of risk analysis." Generally, as indicated by the above remarks, we argue that "the upper bound limits" accepted by the DES in respect to somatic and genetic effects can only be maintained by ignoring recent studies[4] that indicate that 'upper bound limits of deleterious effects' are in fact many times higher than the DES assumes.

Notes

1. Saccomanno G., Comments on lung cancer in cigarette-smoking and non-smoking uranium miners. Final Report:Cluff Lake Board of Inquiry:61, Sas Dept. of the Environment, Regina, Saskatchewan, 1978.

2. For the basis of this view, see Gofman J.W., Radiation and Human Health;Sierra Club Books, San Francisco, 1981, pp. 314-323 and passim.

3. ibid. p. 849 and 707-853 passim.

4. ibid and e.g. Sternglass, Low-level Radiation from Hiroshima to Three-Mile Island McGraw-Hill, New York, 1981 passim.

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September 19, 1982

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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DUKE POWER COMPANY, et al.	)	Docket Nos. 50-413
	)	50-414
(Catawba Nuclear Station,	)	
Units 1 and 2)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "CMEC's Revised Contention #4" in the above docket have been served upon the following by deposit in the United States Mail this 22nd day of September, 1982:

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