

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)

THE REGENTS OF THE UNIVERSITY)
OF CALIFORNIA)

(UCLA Research Reactor)
_____)

Docket No. 50-142
(Proposed Renewal of Facility
License Number R-71)

TESTIMONY OF DR. HARRY A. MOREWITZ
CONCERNING THE SAFETY OF THE UCLA RESEARCH REACTOR

Q.1. Please state your name and occupation.

A.1. My name is Harry A. Morewitz. I am currently President of H. M. Associates, Ltd., which is engaged in the business of providing engineering consulting services in the area of reactor physics and safety.

Q.2. What is the purpose of your testimony?

A.2. The purpose of my testimony is to provide an opinion on fission product dispersion from a fuel-handling accident in the UCLA facility. In connection with providing this testimony I have reviewed the following documents: The Batteille Study (NUREG/CR-2079), the Safety Analysis Report (SAR) of the UCLA research reactor license renewal application (Appendix III), the UCLA Masters Thesis "Atmospheric Dispersion of Argon 41 from the UCLA Nuclear Reactor," by M. P. Rubin (1976), the declarations of Steven Aftergood dated 1/12/82, and that of Jan Beyea dated 1/6/83, and certain other documents.

Q.3. What is your opinion on the dispersion of fission products in the event of a "worst case" accident at the UCLA reactor facility?

A.3. I understand that a fuel-handling accident has been hypothesized as the "worst case" accident for the UCLA facility. In my opinion, the analysis of the hypothetical fuel-handling accident that is contained in Section 8.4 of the UCLA SAR (1982), which postulates a release from one fuel plate, represents a very conservative estimate of possible releases since there appears to be no physical way in which all of the cladding of even one fuel plate can be removed mechanically to permit the postulated release.

Q.4. What is the basis for your opinion?

A.4. The basis for my opinion is the following. As is pointed out in the UCLA SAR, the source term proposed by Battelle assumes the removal of the fuel cladding from all eleven fuel plates in a fuel element during a fuel handling accident. However, the cladding is metallurgically bonded to the fuel alloy "meat" in a sandwich arrangement. Moreover, the cladding is a very ductile and strong material. As a result, it will be difficult to expose the surfaces of the "meat" in even one fuel element through mechanical forces. The source term proposed by Battelle is not realistic. The source term proposed in the UCLA SAR is much more realistic and it is still very conservative. Furthermore, the local dispersion that would be expected in the event of the postulated release has been defined experimentally in a study performed by Mr. M. P. Rubin at UCLA and the dilution factors are well known for the UCLA facility. Those dilution factors demonstrate that, if the assumed fuel-handling

accident were to occur, at a distance of 8.2 meters from the reactor exhaust stack, the 24 hour averaged concentration would be less than two times MPC for unrestricted releases of iodine.

Q.5. What is your opinion of the discussion of expected dispersion that appears in Mr. Aftergood's declaration?

A.5. In my opinion, Mr. Aftergood's analysis is flawed. Although I have not checked his arithmetic, he makes several basic mistakes. In the first place he seems to be attempting to apply a methodology that is inappropriate for describing "close-in" meteorology. More importantly, he assumes a source term that is approximately 50,000 times larger than the source term that is credible for the UCLA facility.

R E S U M E

HARRY A. MOREWITZ

Harry A. Morewitz earned the Ph.D. degree in Physics from New York University in 1953. He is currently president of H.M. Associates, Ltd. which provides consulting engineering services in the areas of reactor physics and safety. Prior to this he was a consultant to the Electric Power Research Institute. Previously he was affiliated with Atomics International for 23 years where he held a variety of research and management positions in the areas of reactor physics and safety. Prior to this, he was a Supervisory Scientist at Westinghouse Electric Company's Bettis Laboratory where he supervised critical and start-up physics experiments for PWR Shippingport. He also served as an instructor in medical physics (dosimetry) at the University of California in Los Angeles (1967 - 1972).

Dr. Morewitz is a member of the American Nuclear Society, the American Physical Society, the American Geophysical Union, the New York Academy of Sciences, and the Health Physics Society. He has served as a member of the USAEC Advisory Committee on Reactor Physics (1967 - 73). He was a member of the ANS/IEEE Technical Writing Group on Probabilistic Risk Analysis (1981-82) and of the ANS Standards Sub-committee 57.4 on LMFBR Site Suitability Source Terms (1974-79). He is a licensed Professional Engineer (nuclear engineering) in the state of California.

In connection with his scientific work, Dr. Morewitz has been invited to serve as Technical Chairman and panel member at numerous national and international meetings and conferences. In 1967, he was a member of the USAEC Fast Reactor Physics Team visiting new European installations, and was chosen to participate in the joint U.S./Japan seminar on Fast Reactor Safety in 1974 and the Joint US/USSR seminar on Fast Reactor Safety in 1977.

Dr. Morewitz has published more than 35 scientific articles in the areas of reactor safety, two-phase flow, reactor physics, aerosol behavior, sodium fires, and reactor critical experiments.

RECENT PUBLICATIONS

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