

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the matter of)
Dairyland Power Cooperative) Docket No. 50-409
(LaCrosse Boiling Water Reactor))

Affidavit of John V. Nehemias Regarding
Intervenor's Contention 2B

My name is John V. Nehemias. I am employed by the Nuclear Regulatory Commission in the Radiological Assessment Branch of the Division of System Integration. I have been employed in this position since 1974. My professional qualifications are attached to this affidavit. This affidavit was prepared by me or under my supervision.

The purpose of this affidavit is to present written testimony addressing Contention 2B admitted for litigation in this proceeding.

Contention 2B reads as follows:

"CREC contends that the excessive off-gas levels at LACBWR are inimical to the health and safety of plant employees, and fail to comply with the restrictions set forth in 10 CFR Part 20."

The Nuclear Regulatory Commission's regulations, in 10 CFR Part 20, "Standards for Protection Against Radiation," provide standards for occupational exposure to radiation and to concentrations of radioactive materials.

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Paragraph 20.101 sets forth a quarterly external radiation dose limit of 1.25 rems to an individual's whole body, but permits up to 3 rems in a quarter, provided that the individual's career dose does not exceed $5(N-18)$, where N is the individual's age in years. Paragraph 20.103 sets forth concentration limits for an individual's exposure to airborne radioactive materials. Until 1976, the exposure reporting limit was 40 MPC-hours per week; since then the reporting limit has been 520 MPC-hours per quarter.

These limits are based upon the guidance of the Federal Radiation Council (now under the jurisdiction of the Environmental Protection Agency) and the recommendations of the National Council on Radiation Protection and Measurements, and the International Commission on Radiological Protection.

I have reviewed the record of occupational over-exposures at the LaCrosse Boiling Water Reactor (LACBWR) since it began routine operation in 1969. There have been no reports of individual exposures to external radiation in excess of regulatory limits at LACBWR. There has been one incident in which individuals were exposed to concentrations of radioactive materials in excess of the regulatory limit (40 MPC-hours at that time).

On May 13, 1975, at 11:20, the reactor vessel head was raised, and airborne radioactive materials were released to working areas. Five members of the maintenance crew were known to have been exposed. An evaluation of the data indicated that none had been exposed to external radiation in excess of 10 CFR Part 20 limits, and that two of the five individuals had been exposed to airborne concentrations of radioactive materials in excess of 10 CFR Part 20 limits, 140 MPC-hours and 89 MPC-hours respectively.

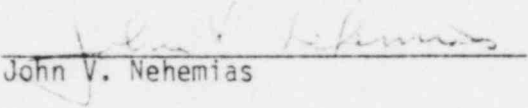
This one incident involving exposures in excess of the Part 20 limits does not indicate a significant departure from a good radiation protection program. The facts do not support the contention that LACBWR has failed to comply with the restrictions set forth in 10 CFR Part 20.

Off-gas emissions are, by definition, releases of radioactive gases, or of other airborne radioactive materials from the reactor plant to the environment outside the plant. Any radiation doses to people that

may result from such releases would also take place out in the environment, not inside the plant where occupational exposures occur. As a result, off-gas emissions cannot contribute significantly to occupational exposures in-plant.

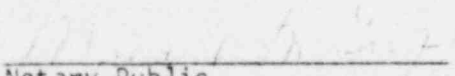
Workers entering the plant at the start of a shift, or leaving the plant at the end of a shift, or walking between plant locations during the shift, may be exposed to some radiation from off-gas emissions. It is unlikely, however, that workers whose main employment is in-plant would spend a significant portion of the working week outside the plant buildings. Since the measured radiation dose rate at the monitoring site nearest the plant stack is of the order of 20 millirems per quarter, radiation from this source could not contribute a significant fraction of typical annual occupational doses. The facts do not support the contention that off-gas emissions from LACBWR are inimical to the health and safety of plant employees.

I have read the foregoing affidavit and swear that it is true and correct to the best of my knowledge and belief.



John V. Nehemias

Subscribed and sworn to before me
this 15th day of May, 1980.



Notary Public

My commission expires: _____

John V. Nehemias
PROFESSIONAL QUALIFICATIONS
Radiological Assessment Branch
Division of System Integration

I am a Senior Health Physicist in the Radiological Assessment Branch, Division of Site Safety and Environmental Analysis, Office of Nuclear Reactor Regulation.

My formal education consists of study in Physics at Rensselaer Polytechnic Institute where I received a B.S. in 1948 and at Columbia University where I received an A.M. in 1949. I received a Ph.D. in Environmental Health (Radiological) from the University of Michigan in 1960.

Before joining AEC/NRC, I served three years at Brookhaven National Laboratory as a health physicist, six years at the University of Michigan as health physicist and assistant director of a radiation effects laboratory, and three years as Director of Radiological Health Surveys for the National Sanitation Foundation. In the latter position, I designed, organized, and directed the environmental survey for the Enrico Fermi nuclear plant.

I joined the AEC in September 1960, as a health physicist in the Office of Health and Safety. My principal duties there related to development of radiation protection standards. With the two exceptions noted below, I have continued with AEC (and NRC) since that time. My principal responsibility was in the development of Standards until September 1974; during most of those years I served as a branch chief-through several name changes and reorganizations-most recently as Chief, Occupational Health Standards Branch, March 1972 to September 1974.

Since September 1974, I have served as Senior health physicist in the Radiological Assessment Branch. My principal function is the review of power reactor applications, both at the construction permit and operating license stage, to determine the adequacy of proposed occupational radiation protection programs and the related efforts proposed to assure that occupational radiation exposures will be maintained as low as is reasonably achievable.

From June 1963 to September 1965, I took a leave of absence from AEC and served as principal member of the Occupational Safety and Health Division of the International Labor Office in Geneva, Switzerland. My work was principally in the development of international standards.

In December 1971, I was transferred to the Criteria and Standards Division, EPA, serving as Chief, Criteria and Standards Branch, until my return to AEC in March 1972.

I have published about 40 technical articles in professional journals and other publications in the general areas of low-level counting, environmental monitoring, radiation effects on biological systems, and control of occupational radiation exposure.

I have been a Certified Health Physicist since 1960, and am a Charter member of the Health Physics Society and of the Baltimore-Washington Chapter.