(2)

16 December 1983

Judges James Kelley, Glenn Bright, & Dr. James Carpenter
ASLB Panel, Docket 50-400, USNRC, Washington DC 20555

Dear Administrative Judges,

Since the December 5 filing by Joint Intervenors and myself re witnesses on radiation health effects (Contentions Joint II and Eddleman 37B and 8F(2)), I have received a statement of qualifications of Dr. Carl Johnson (attached). He has taught epidemiology and public health (U. of Washington), is a fellow of the American College of epidemiology, etc, as set forth in detail in his "Summary of Bio-Data".

In addition, I have delivered a free copy of all documents so far received from Dr. Johnson, to CP&L Legal Dept by hand on 12-13-83.

They are:

Bio-Data of Carl Johnson (summary, qualifications)
Epidemiological Investigation of Cancer Incidence in People Living Near Nuclear Installations (Johnson ltr, Health Physics 45:3, 809-813 (1983))
Science 193 (6 Aug 76) pp 488-490, Plutonium Hazard in Respirable Dust, 3 authors incl. Johnson
Am. J. Public Health 73:5 598-599 (May '83) ltr, by Johnson, Investigations of Health Effects in Populations Living Near Nuclear Installations
AMBIO (Swedish Royal Academy) reprint of Johnson's paper on Cancer Incidence in An Area Contaminated with Radionuclides Near a Nuclear Installation, with comments on it and Johnson's reply to comments
Health Physics 32:445-447 (May '77) re nuclear plant HEPA filters penetration by radionuclides
Comments on 1957 Rocky Flats Fire, by C. Johnson
The American Statistician, Nov'83 37:4, Johnson on Cancer Incidence in Plutonium-Contaminated Areas
Testimony of Belmont Evans, retired Colo. Dept Health, re downplaying of risk/inaction on effluents from nuclear fuel cycle (1981?)
11-25-83 "Daily Camera" p.1B "English Study Backs Flats Findings" quoting Johnson et al on Windscale cancer incidence data (elevated rates near nuke installation)
3 Scientists Proving Rocky Flats Threat Linked to DOE, Rocky Mtn News 5/31/77
Am. J. Public Health 69(2) (Feb 1979) p.181, Fox Guarding Henhouse in Health Physics; attached is reprint of Health Physics magazine, 7/71, vol 21 p.1 Health Physics Society presidential address of D. Moeller, saying "Let's Put Our Mouth Where Our Money Is".

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Per telephone conversation with the Board's law clerk Ruthanne G. Miller on 12-14, copies of any of the above will be given to the Board upon request. CP&L now has everything I have from Dr. Johnson except my personal notes on legal strategy etc.

For himself and the Joint Intervenors,

Wells Eddleman

Wells Eddleman

42 Hillside Drive
Denver, CO 80215
(303) 232-2328
August, 1982

Summary of Bio-Data for Carl Johnson

Dr. Johnson is an associate clinical professor at the University of Colorado School of Medicine and was formerly Director of the Jefferson County Health Department in Colorado. He is past-president of the Colorado Public Health Association, and is active at the national level in the American Public Health Association on the Governing Council, the Health Administration Section Council (Chairman, 1979-80), the Action Board, the Program Development Board (Chairman), the Joint Policy Council (Co-chairman), and the Executive Board (ex-officio). He is board-certified in public health and a fellow of the American College of Epidemiology, the American College of Preventive Medicine, and the American Association for the Advancement of Science. He is a member of the Society for Epidemiologic Research, the International Epidemiological Association, the Epidemiology Section of the American Public Health Association, and the Health Physics Society. He has been active in local and state medical societies.

He was formerly a district health officer in Seattle, and an assistant clinical professor of epidemiology and international health at the University of Washington. He did graduate work in epidemiology and health administration at the University of California at Berkeley (MPH in 1969) and has been elected to Phi Kappa Phi and Delta Omega (Public Health). He has published about 70 scientific articles and abstracts, of which about half are in the area of epidemiology and half concern the study of environmental contamination with radionuclides and their biomedical effects.

In 1965 he did medical research under a National Institute of Health grant at the Ohio State University College of Medicine, receiving an MS degree concurrently with his MD. He has also worked as a pathologist for DuPont's Haskell Laboratory for Toxicology and Industrial Medicine, evaluating the biomedical effects of chemical agents, and taught pathology at Cornell University as an acting associate professor. While a medical student, he worked as a research assistant in neurophysiology, in studies of the distribution of radiocarbon-labeled compounds in tissue.

Currently he is the principal investigator in a project funded by the National Institutes of Health to study health effects in the Denver area downwind from a nuclear installation. Reports of his work have been presented at national and international meetings and at a number of universities, including Harvard, Columbia, and Stanford, and the University of Edinburgh, University College of London, the University of Copenhagen, and the Karolinska Institute in Stockholm.

In Colorado he was chairman of an inter-agency committee which developed the school health standards for the State of Colorado, helped organize the Jefferson County Emergency Medical Services Council and an EMS program, and chaired an Interim Working Committee which developed plans for the alcoholism program. He developed the first strep surveillance and control program in the schools in the Denver area and has been active in the area of health planning and the investigation and resolution of environmental problems. In 1978 he was selected "Man of the Year" by the Denver area Sentinel newspapers.

Dr. Johnson married Kathryn Van Deusen in 1956. They have three children, and live in Wheatridge, Colorado.

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October 31, 1983

Mr. John Lehr
Senior Environmental Engineer
Division of Engineering
U.S. Nuclear Regulatory Commission
Mail Stop P314
Washington, D. C. 20555

Dear John:

I would like to provide you with the following additional information to further demonstrate that the use of the Shirazi-Davis model in my analysis of thermal plume behavior for the Shearon-Harris Nuclear Power Plant is appropriate.

Several laboratory experiments (Koester 1974, Hafetz 1975) have been performed to study submerged single-port thermal discharges for various discharge conditions. Temperature data obtained from those experiments were compared with the simulation results of the Shirazi-Davis buoyant jet model for stagnant environments (Groff 1976). The experimental jet qualities compared include the jet centerline trajectory, the jet centerline temperature decay, and the surface isotherms. The results indicated that, for the designed discharge conditions at the Shearon-Harris plant (Froride Number = 6 ~ 8 and relative depth of submergence = 5 ~ 10), the Shirazi-Davis model predicts jet centerline trajectory slightly shorter than the experimental trajectory and gives slightly higher surface temperature than the experimental jet. This comparison demonstrates that the Shirazi-Davis model is applicable for the Shearon-Harris study, and the temperature predictions which I presented in the DEIS are reasonable and conservative.

Considerable advancement in thermal plume modeling has been made in the last decade. However, the physics and modeling of single-port buoyant jet were well established in the early 70's. Based on my knowledge in thermal plume analysis and my recent conversations with Professor Eric Adams at MIT and Dr. Tony Policastro at ANL, I came to the conclusion that no other models have recently been developed specifically for studying single-port submerged jet. Therefore, if you are interested in reanalyzing the Shearon-Harris discharge plume behavior with a more sophisticated model, it will be necessary to adapt from models developed for other discharge designs.

ANL has implemented on its computer system a three-dimensional model for studying hydrodynamics of thermal discharges in large lakes resulting from near-surface discharge. This model can be modified for the Shearon-Harris case. However, I believe the adaptation of a more sophisticated model for the Shearon-Harris study would only prove costly and not gain much improvement in the predicted temperature results.

The University of Chicago Argonne Universities Association

References

Grofr, C.R., "Data Analysis and Evaluation of Deep-Water Models for Shallow-Water Round-Port Discharges," M.S. Thesis, The Ohio State University, Columbus, Ohio, 1976.

Hafetz, L.I., "An Experimental Study of the Round Buoyant Jet," dissertation presented at University of Connecticut, Hartford, Connecticut, 1975 in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Koester, G.E., "Experimental Study of Submerged Single-Port Thermal Discharges," Pacific Northwest Laboratories, Battelle Northwest, BN-SA-398 (1974).

Sincerely,

Steve Tsai
Environmental Research Division

ST/amw

cc: A. J. Dvorak
R. W. Vocke