UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	Docket Nos. 50-387
	)	50-388
PENNSYLVANIA POWER AND LIGHT CO.	)	
	)	
ALLEGHENY ELECTRIC COOPERATIVE, INC.	)	
	)	
(Susquehanna Steam Electric Station, Units 1 and 2)	)	

AFFIDAVIT OF REGINALD L. GOTCHY

I, Reginald L. Gotchy, being duly sworn, depose and state:

1. I am employed by the U.S. Nuclear Regulatory Commission as a Senior Radiobiologist in the Division of Systems Integration, Office of Nuclear Reactor Regulation. A copy of my statement of professional qualifications is attached.

   In this position I am responsible for assessing the environmental impacts of nuclear facilities and alternative fuel cycle facilities.

2. I have read the Applicant's Motion for Summary Disposition of Contention 1 and the Affidavit of Dr. Morton I. Goldman which accompanies and supports the Motion.

Radon-222 Releases Per RRY

3. With respect to Radon-222 release portion of Contention 1, I view the Applicant's request as appropriate and based on the record of the Atomic Safety and Licensing Appeal Board decision of May 13, 1981 (Peach Bottom proceeding, ALAB-640) which accepted detailed testimony on Radon-222 releases by Dr. Goldman. The relatively minor differences in the release estimates by Dr. Goldman in his supporting affidavit and ALAB-640 release estimates are due to slightly different assumptions regarding such things as average ore grade and projected ore recovery methods, and considering the uncertainties, do not substantially conflict with the Appeal Board decision (ALAB-640) regarding Radon releases per RRY. I, therefore, support the Applicant's request for summary disposition of the Rn-222 release estimates.

Radiological Impact of Radon-222 Releases

4. I have also reviewed the Applicant's request for summary disposition of the Radon-222 health effects issue and the supporting affidavit of Dr. Goldman. I fully agree that the Radon-222 population doses from the radon releases per RRY are insignificant relative to the same type of doses from other sources of naturally occurring radon-222, and that the radon-222 releases resulting from operation of the Susquehanna facility would be undetectable, and further that the impact on the health and safety of the public would be insignificant.

5. However, I feel this approach, while true, does not completely ventilate the question of potential health impacts per RRY. That is why the staff presented a brief assessment of the potential health impacts per RRY in the DES for the Susquehanna facility (pp. 4-33 through 4-34). Therefore, I wish to support the Applicant's request for summary disposition by providing additional discussion of the potential incremental increases in health effects due to the radon releases which were estimated by the Appeal Board in ALAB-640.

6. I presented testimony on the health effects of Radon-222 in the Perkins proceeding (Duke Power Co., 1978). In my testimony, I concluded that the potential health impacts (assuming the world and the American people remain essentially the same as they are today) would be on the order of 0.11 to 1.2 cancer deaths and 0.036 to 0.40 genetic effects per RRY over periods ranging from 100 to 1,000 years into a dim and uncertain future. Since, the Perkins hearing, new estimates of collective population doses per curie (Ci) of radon-222 and the potential cancer and genetic risks have been developed by the Staff based on the most recent information available.* NUREG-0757 has summarized all of the pertinent changes since the Perkins hearing except the estimates of health effects per million person-rem, which, using the 1980 estimates of the Committee on the Biological Effects of Ionizing Radiation, can now also be updated.

7. Table 1 summarizes the major changes since the Perkins hearing. The potential health effects estimates in the Perkins record have not been substantially changed by subsequent events. They represent a reasonably conservative estimate of the risks over reasonable periods of time and are not substantially different from estimates derived from NUREG-0757.

8. The fact that less than one potential cancer or serious genetic effect is predicted to occur among a constant population of 300-million people for each RRY is a clear indication that the impacts of Radon-222 are de minimus and unworthy of further serious consideration. Furthermore, recent advances in the treatment

*[a] Final Generic Environmental Impact Statement on Uranium Milling, NUREG-0706 (September, 1980).

[b] Radon Releases from Uranium Mining and Milling and their calculated Health Effects NUREG-0757, (February, 1981).

[c] The Effects on Populations of Exposure to Low Levels of Ionizing Radiation, 1980, National Academy Committee on the Biological Effects of Ionizing Radiation of Science (BEIR III Report-1980).

and prevention of cancer suggest that the impacts per RRY are likely to be even smaller than the most current estimates in Table 1.

9. Given that the potential health effects of Radon-222 have been shown to be de minimus, I fully support the Applicant's Motion Summary Disposition on Contention 1.

10. The statements given above are true and correct to the best of my knowledge.

Reginald L. Gotchy

Reginald L. Gotchy

August 24th, 1981

Patricia A. Sullivan

Notary

My Commission Expires October 14, 1983

Table 1. Update of the Potential Health Impacts of Radon-222 Releases From Uranium Mining and Milling Per RRY

	Based on the Perkins Record	Based on NUREG-0757	Current Estimates Based on BEIR III
Source Term (Ci)			
a. 100-yr Environmental Dose Commitment	5,300	6,800	Same
b. 1,000-yr Environmental Dose Commitment	59,000	31,000	Same
Population Doses (Person-rem)			
a. 100-yr Environmental Dose Commitment			
Total Body	140	58	Same
Lung*	3,000	670	"
Bone	3,600	920	"
b. 1,000-yr Environmental Dose Commitment			
Total Body	1,500	310	"
Lung	33,000	3,100	"
Bone	41,000	4,200	"
Potential Health Impacts			
a. 100-yr Environmental Dose Commitment			
Cancer Mortality	0.11	0.06	0.08
Genetic Effects**	0.036	0.02***	0.02
b. 1,000-yr Environmental Dose Commitment			
Cancer Mortality	1.2	0.3	0.4
Genetic Effects	0.4	0.08***	0.07

*Bronchial epithelium

**All serious defects over next 5 generations.

***Genetic effects were incorrectly based on total-body equivalent dose; as shown, it is corrected for total body dose only.

DR. R. L. GOTCHY

Professional Qualifications

My name is Reginald L. Gotchy. I am a Senior Radiobiologist on assignment with the Radiological Assessment Branch in the Office of Nuclear Reactor Regulation. In this capacity, I am responsible for coordinating the technical review and evaluation of the environmental radiological impact of nuclear facility operations.

I received a B.S. in Zoology from the University of Washington in 1958, an M.S. in Radiation Health from the Colorado State University in 1966, a Ph.D. in Radiation Biology from the Colorado State University in 1968, and attended the University of Washington Graduate School 1958-1958 as an AEC Radiological Physics Fellow.

I have 19 years of professional experience in health physics, industrial hygiene, radiation physics, radiation biology, environmental sciences, project coordination of research and development programs, and development of AEC and NRC standards. This experience has included operational and safety responsibilities, and review and coordination of facility operations under contract to the AEC. I have been employed by the Lawrence Radiation Laboratory, the U.S. Public Health Service, Reynolds and Electrical Engineering Company, the AEC Nevada Operations Office, and the NRC Office of Standards Development prior to my assignment in the Office of Nuclear Reactor Regulation in 1975. I was an adjunct professor of Radiation Health Technology at the University of Nevada, Las Vegas (1969-1972).

I am a member of Sigma Xi (Research Society of North America), the American Nuclear Society, the Health Physics Society and the International Radiation Protection Association, and the Radiation Research Society. I am a past member of the American Association for the Advancement of Science and the American Industrial Hygiene Association.

I am certified by the American Board of Health Physics, and served as a member of the Panel of Examiners (1972-1976). I remain active in the development of examination questions and updating my professional standing by periodic post-graduate work and training.

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	)	
(Susquehanna Steam Electric Station, Units 1 and 2)	)	

NOTICE OF APPEARANCE

Notice is hereby given that the undersigned attorney herewith enters an appearance in the captioned matter. In accordance with §2.713(a), 10 C.F.R. Part 2, the following information is provided:

Name	Lucinda Low Swartz
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Name of Party	NRC Staff U.S. Nuclear Regulatory Commission Washington, D. C. 20555

Lucinda Low Swartz
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 27th day of August, 1981

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CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF RESPONSE SUPPORTING APPLICANTS' MOTION FOR SUMMARY DISPOSITION OF CONTENTION 1 (Radon)", "AFFIDAVIT OF REGINALD L. GOTCHY" and "NOTICE OF APPEARANCE" dated August 27, 1981, in the above-captioned proceeding have been served on the following by deposit in the United States mail, or as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 27th day of August, 1981:

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