

January 11, 1994

AFFIDAVIT OF THOMAS E. POTTER

I, Thomas E. Potter, being duly sworn, hereby state as follows:

- 1) My name is Thomas E. Potter. My business address is 4231 Jenifer Street, N.W., Washington, D.C. I have been a consultant in radiation protection for over twenty years. A statement of my professional background is contained in Attachment A to the Affidavit.
- 2) In the course of my professional career I have frequently employed computer codes to perform environmental radiation assessments. In preparing this Affidavit I used the U.S. EPA CAP88-PC package (Clean Air Act Assessment Package, 1988). Although I had not previously used CAP88-PC, I have extensive experience in the use of AIRDOS-EPA and DARTAB, the assessment modules in the CAP88-PC package.
- 3) Some of my consulting work over the past two years has included assisting SFC in evaluating aspects of its radiation protection program and in developing the Site Characterization Plan to be submitted to the Nuclear Regulatory Commission. As a result of this work, I am familiar with conditions at the site that bear on the analysis reported here.
- 4) The purpose of this Affidavit is to respond to Paragraph 12 of the Affidavit of Timothy P. Brown dated September 27, 1993. In his Affidavit, Mr. Brown states that wind blown contaminants from the SFC site are a potential source of contamination of Mr. Henshaw's property. Mr. Brown makes only vague and unsubstantiated general allegations that improperly contained soil "may be blown by the wind . . . , traveling the short distance to Henshaw's property." Mr. Brown presents no facts to support his allegations.
- 5) To evaluate Mr. Brown's allegations, I conducted a bounding calculation of the maximum concentration of wind blown uranium contaminant that could be deposited on soil on Mr. Henshaw's property. The starting point of this analysis was the grossly conservative and highly unrealistic assumption that the entire estimated inventory of contaminated soils on the SFC site is somehow made available for wind blown transport offsite. This material was then assumed to be dispersed during transport and deposited at downwind locations in accordance with well understood atmospheric transport phenomena. The total quantity deposited per unit area was then calculated for the location of interest. The location selected for calculation is 1,000 meters south-southeast from the SFC facility, and is a conservative representation of the location of Mr. Henshaw's property. To calculate contaminant concentration in soil, it was

further conservatively assumed that deposited contaminant remained confined within the top one inch of soil. The soil density assumed was 1.6 grams per cubic centimeters, typical for surface soils. The calculated concentration of deposited uranium in soil at the location of interest was then compared to typical concentrations of naturally occurring uranium in soil.

- 6) Various estimates of the inventory of uranium contamination on the SFC site exist. NACE's public claim that the inventory is approximately 140,000 pounds is, by far, the largest. Other estimates range as low as 21,000 pounds. For purposes of this analysis, an inventory of 80,000 pounds was assumed as likely to be conservatively high and within a factor of 2 of the NACE estimate.
- 7) The purpose of using the CAP88-PC package was to calculate the relative deposition rate (1/square meter), a quantity calculated primarily using meteorological data. This quantity is the ratio of the deposition rate to the release rate. The actual deposition rate is the product of the release rate and the relative deposition rate. However, we are interested not in deposition rate, but total deposition. Total deposition is the product of the relative deposition rate and the total release quantity, and is independent of release rate.
- 8) The relative deposition rate is calculated as the product of the relative air concentration, X/Q (seconds per cubic meter), and the deposition velocity (meters/second), an empirical parameter. The deposition velocity used in this analysis was 0.0018 meters/second, a default input value that is considered reasonable. The value of X/Q was computed by the CAP88-PC code package using a five-year record of meteorological data from Fort Smith, Arkansas, which is representative of the site. The X/Q value calculated at the location of interest was 5.4×10^{-7} seconds per cubic meter.
- 9) For purposes of analysis, it was assumed that the contaminant source was uniformly distributed over a 20-acre area and available for release at ground level. The results are not sensitive to the assumption of an area source. Sensitivity analysis indicated that assumption of a point source resulted in nearly the same calculated deposition.
- 10) The results of this highly conservative bounding analysis show that at 1,000 meters south-southeast from the SFC facility the calculated total uranium deposition is 2.4×10^4 picocuries per square meter, which is equivalent to a uranium concentration of about 0.6 picocurie per gram in the

top one inch of soil. This increment is about one-half the concentration of naturally occurring uranium in soils in the area, typically about 1 to 1.5 picocuries per gram. Moreover, it is at least an order of magnitude lower than the uranium concentration (30 picocuries per gram) that the Nuclear Regulatory Commission has considered acceptable for an area to be released for unrestricted use since the adoption of Option 1 of the Branch Technical Position, "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations," referred to in the "Action Plan to Ensure Timely Cleanup of Site Decommissioning Management Plan Sites" (57FR13389, April 16, 1992). Because the radiation dose from naturally occurring uranium in soil is a small fraction of the total radiation dose from all natural sources, the radiation dose from the deposited material conservatively calculated above can be considered a negligibly small increment to the radiation dose from naturally occurring sources.

- 11) Thus, it is obvious that the SFC site poses virtually no potential for significant contamination of Mr. Henshaw's property.
- 12) The statements of fact in this Affidavit are true and correct to the best of my knowledge, information, and belief.

Date:

1/11/94

Thomas E. Potter

DISTRICT OF COLUMBIA, ss:

Subscribed and sworn to before me this 11th day of January, 1994

Teresa Grasty
Notary Public

TERESA GRASTY

Notary Public, District of Columbia

My commission expires:

~~My Commission Expires May 14, 1995~~

THOMAS E. POTTER**EDUCATION**

MS, Environmental Science, 1972
The University of Michigan
Emphasis in Radiological Science

BS, Chemistry, 1963
The University of Pittsburgh

CURRENT POSITION

Since 1991, Mr. Potter has been an independent consultant on matters related to radiation protection. During this period, Mr. Potter has participated in a detailed radiation protection management review at a fuel cycle facility, has conducted independent audits of licensee radiation protection programs, has participated in an assessment of the radiological impacts on the public from past operation of a DOE weapons facility, and has managed an environmental radiological assessment for a nuclear fuel facility decommissioning.

PREVIOUS PROFESSIONAL EXPERIENCE

From 1984 through 1990, Mr. Potter was a partner and consultant in Morton and Potter, where he consulted on radiation protection matters, specializing in health and safety aspects of nuclear power. Mr. Potter performed detailed management reviews of power reactor radiation protection programs at two nuclear utilities. He managed an environmental analysis to support federal and state licensing of a low-level radioactive waste compaction and incineration facility and provided supporting testimony in the NRC hearing. He managed a severe accident consequence assessment performed as part of a study of the use of PRA methodology in evaluating changes to emergency response plans. In late 1986, he lectured and conducted computer workshops in Cairo as part of a course on environmental radiation dose assessment sponsored by the International Atomic Energy Agency for the Egyptian government. During this period, Mr. Potter also participated in a variety of other radiological assessments, including assessments supporting a materials licensee pond decommissioning, the application of sewage sludge contaminated with low levels of radioactive material as agricultural fertilizer, and the state permitting of a phosphate ore processing plant. Mr. Potter participated in activities supporting the Fuel Cycle Facilities Forum, including the preparation of formal comments on the initial draft of NUREG/CR-5512, "Residual Radioactive Contamination from Decommissioning," ultimately intended to serve as an NRC technical methodology for the derivation of permissible residual contamination levels for decommissioning.

From 1973 to 1984, Mr. Potter was a consultant and senior consultant on health and safety aspects of nuclear power at Pickard, Lowe, and Garrick, Inc. He performed probabilistic analyses of off-site consequences of power reactor accidents as part of full-scope probabilistic risk assessments for nuclear power plants. He performed environmental radiation dose assessments for nuclear power plant safety analyses, environmental reports, and operating

reports. He assisted clients in design and implementation of occupational and environmental radiation monitoring programs and interpretation of results. He provided independent review of in-plant radiological programs and effluent analysis programs. He participated in the design and development of the CRACIT code, a computer program for probabilistic assessment of power reactor accident consequences. He also participated in a comprehensive assessment of off-site radiation from the Three Mile Island accident.

In the period 1972 to 1973, Mr. Potter was a consultant to Dr. G. Hoyt Whipple of the University of Michigan in his private consulting practice. In that capacity, he prepared radiological health sections of safety analysis reports, designed environmental monitoring programs, and evaluated data from those programs. He developed a mathematical model to predict radiation doses from effluents from normal operation of nuclear power plants.

From 1963 to 1970, Mr. Potter was employed by the Nuclear Materials and Equipment Corporation (NUMEC), first as a process chemist, then, in 1966, as a plutonium fuel facility health and safety supervisor, and finally, in 1969, as a license administrator. In his capacities related to radiation safety, he provided radiological safety review of major facility modifications. He used those analyses and nuclear criticality analyses performed by others to prepare AEC special nuclear materials and byproduct license applications. As the license administrator, he served as corporate contact with AEC in matters related to licensing. As a health and safety supervisor, he organized and supervised a radiological protection program for a plutonium fuels fabrication facility and hot cell facility. He instituted personnel monitoring programs using thermoluminescent dosimetry and breathing-zone aerosol sampling in 1967. He served as secretary of a plant safety committee that inspected all operations and reviewed detailed written procedures for operators. He served as a member of a corporate safety committee which determined corporate policy regarding health and safety matters.

MEMBERSHIPS

American Nuclear Society
American Chemical Society

ADDRESS AND TELEPHONE

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REPORTS AND PUBLICATIONS

Woodard, K., and T.E. Potter, "Consideration of Source Term in Relation to Emergency Planning Requirements," presented to Workshop on Technical Factors Relating Impacts from Reactor Releases to Emergency Planning, Bethesda, Maryland, January 12-13, 1982.

Garrick, B.J., S. Kaplan, G. Apostolakis, D.C. Iden, K. Woodard, and T.E. Potter, "Seminar: Probabilistic Risk Assessment of Nuclear Power Plants," PLG-0141, July, 1980.

Garrick, B.J., S. Kaplan, G. Apostolakis, D.C. Bley and T.E. Potter, "Seminar: Probabilistic Risk Assessment as Applied to Nuclear Power Plants," PLG-0124, March, 1980.

Woodard, K., and T.E. Potter, "Modification of the Reactor Safety Study Consequences Computer Program (CRAC) to Include Plume Trajectories." presented to the 1979 ANS 25th Winter Meeting, San Francisco, California, November 11-15, 1979.

Woodard, K., and T.E. Potter, "Assessment of Noble Gas Releases from the Three Mile Island Unit 2 Accident," presented to the 1979 ANS 25th Winter Meeting, San Francisco, California, November 11-15, 1979.

Woodard, K., and T.E. Potter, "Probabilistic Prediction of X/Q for Routine Intermittent Gaseous Releases," Transactions of the American Nuclear Society, Vol. 26, June, 1977.

Garrick, B.J., S. Kaplan, P.P. Bieniarz, K. Woodard, D.C. Iden, H.F. Perla, W. Dickter, C.L. Cate, T.E. Potter, R.J. Duphily, T.R. Robbins, D.C. Bley and S. Ahmed, "OPSA, Oyster Creek Probabilistic Safety Analysis," (Executive Summary, Main Report, Appendices), PLG-0100 DRAFT, August, 1979.

DISCLAIMER

This is an unofficial transcript of a meeting of the United States Nuclear Regulatory Commission held on November 8, 1993 in the Commission's office at One White Flint North, Rockville, Maryland. The meeting was open to public attendance and observation. This transcript has not been reviewed, corrected or edited, and it may contain inaccuracies.

The transcript is intended solely for general informational purposes. As provided by 10 CFR 9.103, it is not part of the formal or informal record of decision of the matters discussed. Expressions of opinion in this transcript do not necessarily reflect final determination or beliefs. No pleading or other paper may be filed with the Commission in any proceeding as the result of, or addressed to, any statement or argument contained herein, except as the Commission may authorize.

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

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OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)
)

SEQUOYAH FUELS CORPORATION)
and GENERAL ATOMICS)

(Sequoyah Facility))
_____)

Docket No. 40-8027-EA

CERTIFICATE OF SERVICE

I hereby certify that copies of Sequoyah Fuels Corporation's Reply to Native Americans for a Clean Environment's Supplemental Factual Allegations, New Arguments, and Request for Discretionary Intervention were served upon the following persons by deposit in the United States mail, first class postage prepaid and properly addressed on the date shown below or by messenger (as shown by an asterisk):

*Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Attention: Docketing & Service Branch
(Original and two copies)

*Office of Commission Appellate Adjudication
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Administrative Judge James P. Gleason, Chairman
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Administrative Judge G. Paul Bollwerk, III
Atomic Safety and Licensing Board
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*Administrative Judge Jerry R. Kline
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Dated this 11th day of January 1994.


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