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UNIVERSITY OF CALIFORNIA, LOS ANGELES

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OFFICE OF THE CHANCELLOR
LOS ANGELES, CALIFORNIA 90024

April 6, 1984

John H. Frye, III, Chairman
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Emmeth A. Luebke
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Glenn O. Bright
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

In the Matter of
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
(UCLA Research Reactor)
Docket No. 50-142
(Proposed Renewal of Facility License)

Dear Administrative Judges:

Enclosed are two documents "Supplement to Rebuttal on Credibility of Graphite Fire at the UCLA Facility" and "Supplement to Rebuttal on Credibility of CBG's Fission Product Release Model" which are intended to supply the information called for in paragraphs 6 a) and 7 c) of the Board's Order of March 22, 1984.

University does not intend to cure the defect discussed in paragraph 7 d) of the Board's Order. The parenthetical statement does not appear in the Parker and Creek study but was based, instead, on a private conversation with George Parker. Mr. Gerard L. Hofman has agreed to testify for UCLA concerning his unpublished research to cure the defect discussed in paragraph 7 f) of the Board's Order.

Very truly yours,

W H Cormier

William H. Cormier
Representing UCLA

Enclosure

cc: Service List

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SUPPLEMENT TO REBUTTAL ON CREDIBILITY OF GRAPHITE FIRE AT THE UCLA FACILITY

The studies to which reference is made in answer 8 consist of the following:

Proceedings of the International Conference in Geneva, Peaceful Uses of Atomic Energy, August 1955, Volume 7.

-"Irridation Damage to Artificial Graphite", W. K. Woods, et al :

> "This report consists of a compilation of representative data on the effects of irradiation on graphite. Particular attention is given to those effects most pertinent to the evaluation of graphite as a reactor material. The source material for this report consists of a large body of hitherto classified reports which have not yet been made available for public release."

-"The Effects of Irradiation on Graphite", G. H. Kinchin.

-"Radiation Damage to Graphite from 30°C to 185°C", R. E. Nightingale & J. F. Fletcher, HW-47776 (1957).

Proceedings of the French-American Conference on Graphite Reactors BNL 489.

-"The Effect of Radiation on the Rate of Oxidation of Graphite", W. L. Kosiba, et al.

-"The Prediction of Conditions for Self-Sustaining Graphite Combustion in Air", J. S. Nairn & V. J. Wilkinson.

Carbon and Graphite Handbook, C. L. Mantell. (Data from Mantel book used in testimony; Mantel cites the following references for its data:)

-Nightingale, et al., Second United Nations International Conference on Peaceful Uses of Atomic Energy, 1, 295 (1958); Davison, et al. HN-57, 900.

-Durand, R. E. and Klein, D. J., Atomics International, NAA-SR-1520 (1956).

-Hove, J. E., Conference on Industrial Carbon and Graphite, SCI, Page 501, London.

-Smith, A. W. and Rasor, N. S., Phys. Rev., 104 (1956)

-Hook, A. S., Report NAA-SR-119 (1952).

-Kosiba, W. L. and Dienes, G. L., BNL-2542, AEC report TID 7565.

SUPPLEMENT TO REBUTTAL ON CREDIBILITY OF CBG'S FISSION PRODUCT RELEASE MODEL

The empirical evidence mentioned in answer 2 (page 7) of the testimony includes the following:

"Fission Product Release from TRIGA-LEU Reactor Fuels", N. L. Baldwin, F. C. Foushée and J. S. Greenwood, 7th Biannual U.S. TRIGA Users Conference, San Diego, CA (March 1980); GA-16287.

The "catcher-foil" experiments have been performed with uranium fuels for a number of years and are a well established technique for obtaining mixtures of fission product isotopes free of the fuel matrix without the necessity of chemical separation. The technique is independent of the fuel material, consequently both metal and ceramic fuel material have been used in these experiments. Typically, the fuel sample is wrapped in Type 2S Aluminum foil of several mils thickness and subsequently irradiated with neutrons in a reactor or thermal column. Some of the energetic fission fragments from the uranium penetrate the surface of the irradiated fuel and cross the air gap to bury themselves in the surrounding aluminum foil. When the irradiation is finished, the sample is removed from the irradiation facility and the aluminum foil unwrapped from the fuel sample. See, N. Etherington, Nuclear Engineering Handbook, p. 5-105, McGraw-Hill Book Co., New York, N.Y. (1958).

There is no evidence of "tracks" in wrought materials similar to the thickness of the UCLA fuel. The investigations cited by CBG's witnesses used evaporated thin films of aluminum, platinum, and other materials. The effects observed are mainly due to thermal effects and not displacement

effects. See, J. J. Kelsch, et al., "Observation of Fission Fragment Damage in Thin films of Metals", J. App. Physics, 33, 1475 (1962); J. J. Kelsch, et al., "New Technique for the Direct Investigation of Fission Events", Br. J. App. Physics, 11, 555 (1960); and N. F. Pravdyuk and V. M. Golyanov, "Examination of Uranium Fission with an Electron Microscope", p. 160, Properties of Reactor Materials and the Effects of Radiation Damage, (D. J. Littler, ed.) Butterworths, London (1961).