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MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 1410
PADUCAH, KENTUCKY 42001
January 24, 1994

Mr. Jimmie C. Hodges, Acting Site Manager
Paducah Operations Office
Department of Energy
Post Office Box 1410
Paducah, Kentucky 42002-1410

Dear Mr. Hodges:

Radiation Release Experiments

A systematic review of the Paducah Gaseous Diffusion Plant (PGDP) files was performed per your January 4, 1994 request for information on deliberate release of radioactive material to the environment or experimental exposure to humans. A similar request was made by Joe LaGrone to Gordon Fee in a January 4, 1994 letter, "Independent Review of Human Medical and Scientific Experiments and Other Radiation Release Experiments." The information being provided to you is also being sent to Tom Row of Martin Marietta Energy Systems, Inc. (MMES) under separate transmittal for inclusion in the consolidated response to Joe LaGrone.

The file search at PGDP was performed by several organizations including Martin Marietta Utility Services, Inc. (MMUS) Records Management; MMUS Library; MMUS Photographic Services; MMUS Technical Services; MMUS Safeguards, Security, and Emergency Services; and MMES Health and Safety Staff. In addition, a number of retirees were questioned to assist in the search.

Information relating to radiation releases due to operation of the gaseous diffusion process and its many support facilities is not included in this document.

No record of any type was found on any experimental exposure to humans performed at PGDP.

Evidence was found of deliberate experimental releases of UF₆ to the atmosphere in 1953 and again in 1974.

The 1953 releases are referenced in an April 17, 1973 memo (Attachment 1) to file from Nuclear Materials Control and Accountability summarizing material releases and measured losses between July 1, 1952 and July 1, 1972. The two 1953 events are labeled as a 4.4 kilogram release done as experimental work June 30, 1953 (material release report number 0604) at the hot salvage yard, and as a 0.68 kilogram release done as experimental work July 13, 1953 (material release report 075) at the hot salvage yard. A file listing seven negatives of a "gas (P.G.) release demonstration" dated June 30, 1953 was also found; negatives 1 and 2 were not found, but prints of the remaining five are attached.

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Mr. Jimmie C. Hodges

2

January 24, 1994

(Attachment 2). The unclassified term P.G. (Process Gas) was used instead of the then classified term UF₆. The photographs appear to correspond to the June 30, 1955 release documented in the April 17, 1973 memo to file. In addition, an entry in the shift superintendent's log (Attachment 3) on June 30, 1955, also documents that the experiment was conducted to "enable better estimates of release quantities." No other information has been found reporting the July 13, 1955 release.

A file listing 13 negatives of a "controlled P.G. release" dated January 24, 1974 was found; copies of all 13 photographs are attached (Attachment 4). The 1974 releases appear to be referenced in two staff notes issued January 6, 1975 and March 26, 1975. The two staff notes have been bound and issued for reference as report KY-795 dated January 6, 1994 (Attachment 5). The staff notes appear to be part of report KY-L-624, "The Application of the Gaussian Plume Equation to UF₆ Releases," April 15, 1976 (Attachment 6). The author (who retired in 1976) was contacted and he recalled several studies that were performed in that time frame with SF₆ and UF₆ to help verify plume models. No references to this work have been found in the Nuclear Materials Control and Accountability files.

Please contact me if you have any questions.

Sincerely,

Jimmy C. Massey
Paducah ERWM Site Manager

JCM:rs

Attachments 6

cc/aic: PGDP ERWM Document Management Center-RC
file

cc: M. F. P. DeLozier, OAK RIDGE
L. E. Hall, OAK RIDGE
D. L. Mason, OAK RIDGE
S. Polston
T. H. Row, OAK RIDGE

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