

1016

**NUCLEAR MATERIAL HOLDUP IN DUCTWORK
AND VENT STACKS**

06/11/90

**DOE-1264-90
DOE-FMPC/WMCO**

25
LETTER



1016

Department of Energy

Oak Ridge Operations

P.O. Box 2001

Oak Ridge, Tennessee 37831-8560

June 11, 1990

DOE-1264-90

Mr. Bruce Boswell, President
Westinghouse Materials Company of Ohio
Post Office Box 398704
Cincinnati, Ohio 45239-8704

Dear Mr. Boswell:

NUCLEAR MATERIAL HOLDUP IN DUCTWORK AND VENT STACKS

The Office of Safeguards and Security (OSS) is concerned that nuclear material may have accumulated, without discovery, in ductwork downstream from exhaust filters at DOE facilities. This concern is based on a report that such an event was discovered at Rocky Flats. Please refer to the enclosure.

The initial concern raised by OSS has grown to include concerns of criticality and unauthorized releases to the environment caused by an upset of the ductwork and stack systems. Thus, accumulations of nuclear materials in addition to weapons grade assays are of interest.

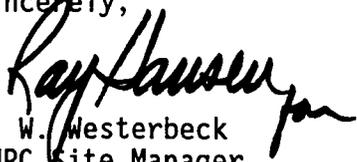
You are requested to evaluate the ductwork and vent stacks at your plant to answer the questions raised by OSS as they pertain to nuclear materials and, in addition, address the following questions of concern to ORO:

1. What have you done to baseline (or characterize) the current conditions?
2. What are the frequencies for monitoring ductwork and stacks to identify growth in accumulations?
3. Do procedures, standards, and training programs exist to assure an effective monitoring program?
4. If conditions are not what you believe they should be, what remedial actions do you believe are needed in order to more effectively monitor ducts and stacks at your plant?

-2-

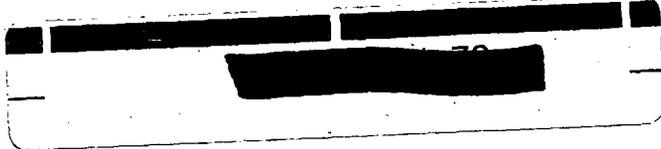
Your response by June 25, 1990 would be appreciated. Please contact Garland Proco (FTS 626-9293) for questions on this letter.

Sincerely,


G. W. Westerbeck
FMPC Site Manager

Enclosure

cc: W. R. Bibb, DP-80
P. T. Marquess, FA-70
D. B. Howard, SE-33
D. J. Cook, DP-82
R. E. Ross, FA-73
G. R. Proco, FM-732



N O N W D/UNCLASSIFIED NARRATIVE

SUBJECT: UNANTICIPATED HOLPUP IN DUCTWORK

ATTACHED FOR YOUR INFORMATION IS A NEWSPAPER ARTICLE WHICH RAISES SPECULATION THAT KILOGRAM QUANTITIES OF PLUTONIUM HAVE ACCUMULATED IN EXHAUST DUCTS DOWNSTREAM FROM PARTICULAR AIR FILTERS AT A DOE FACILITY. ALONG WITH THE SAFETY AND ENVIRONMENTAL CONSIDERATIONS THAT ARE ASSOCIATED WITH THIS ISSUE, IT IS APPROPRIATE TO RE-EXAMINE THE SIGNIFICANCE THAT THE ISSUE HAS ON THE DEPARTMENT'S SNM ACCOUNTABILITY PROGRAM AND IN PARTICULAR, WHETHER ANY CHANGES IN ACCOUNTABILITY PRACTICES ARE APPROPRIATE. PARA. I WOULD APPRECIATE YOUR REVIEW OF THIS ISSUE AS IT MAY APPLY TO FACILITIES UNDER YOUR COGNIZANCE. FOR EACH FACILITY AND PROCESS WHICH HAVE THE POTENTIAL FOR UNMEASURED MATERIAL ACCUMULATION IN VENTILATION DUCTWORK, PLEASE PROVIDE ME WITH THE FOLLOWING INFORMATION:

- O IDENTIFICATION OF THE FACILITIES AND PROCESSES.
- O HAVE INVESTIGATIONS/SEARCHES/INVENTORIES BEEN CONDUCTED FOR SNM IN THE PIPING AND DUCTWORK BEYOND THE FILTERS?
- O IF SO, WHAT METHODS AND MEASURING EQUIPMENT HAVE BEEN USED? HAVE QUANTITATIVE MEASURES OR ESTIMATES OF SNM ACCUMULATION BEEN ESTABLISHED? WHAT ARE THE CURRENT ESTIMATES AND ASSOCIATED UNCERTAINTIES?

AFTER COMPLETING YOUR REVIEW, I WOULD APPRECIATE ALSO RECEIVING YOUR VIEWS ON THE SIGNIFICANCE THIS ISSUE (I.E., HOLDUP DOWNSTREAM FROM FILTERS) HAS ON THE DEPARTMENT'S ACCOUNTABILITY PROGRAM AND YOUR RECOMMENDATIONS OF ANY POLICY OR PROCEDURAL CHANGES RELATING TO PROCESS HOLDUP WHICH WOULD FURTHER ENHANCE THE RELIABILITIES OF SNM ACCOUNTABILITY. PARA. YOUR RESPONSE IS REQUESTED BY MAY 18, 1990. ANY QUESTIONS CAN BE DIRECTED TO ROD MARTIN (FTS 233-5618) OR BILL HENSLEY (FTS 233-3649). END.

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The Washington Post

MAR 29 1997

Rocky Flats Plutonium Waste-Buildup Figure Rises

*Survey Indicates 62 Pounds in Ducts at Nuclear Weapons Complex, Twice
Earlier Estimate*

By R. Jeffrey Smith and T.R. Reid
Washington Post Staff Writers

The Energy Department has determined that roughly 62 pounds of plutonium, a radioactive, carcinogenic component of nuclear weapons, is trapped as dust in waste ventilation piping and ductwork at the closed Rocky Flats, Colo., complex that manufactures triggers for weapons in the U.S. nuclear arsenal.

The assay is more than double what the department had earlier publicly estimated, raising fresh fears among members of citizens groups in nearby Denver about potential safety hazards from any accidental dispersal of the dangerous substance.

If collected, the amount would be more than enough to construct a handful of nuclear weapons—a circumstance arousing concerns that the Department of Energy (DOE) has not kept adequate track of plutonium at the plant. No one at the department had a reliable estimate of how much plutonium was in the waste-collection pipes until an intensive survey with sensitive instruments last week.

DOE officials said the survey indicates that the risk of unexpected concentrations of plutonium waste large enough to cause a "criticality," or nuclear chain reaction and burst of radiation, is small. But a department report concluded in October, after a preliminary inspection, that at least one accumulation had "a serious potential for causing a criticality accident under certain conditions."

Leo Duffy, DOE's director of environmental restoration and waste management in Washington, said in an interview yesterday that Rocky Flats managers planned to improve plutonium filtration at the plant and conduct heightened monitoring for potential "critical" accumulations.

He said the trapped dust was generated over an undetermined period in enclosed containers when workers protected by gloves ground, mixed or melted the substance to make plates that would later be shaped into configurations required by weapons designs. A series of filters that were supposed to collect the dust in more than a mile of piping and exhaust ducts at the plant either malfunctioned or were not properly maintained, he said.

"It seems to me that it is not safe to operate the plant with that kind of buildup of waste nuclear material," said Melinda Kassen, a lawyer with the Environmental Defense Fund office in Boulder, Colo. Kassen learned of the department's new higher estimate in a telephone conversation yesterday with Anson Burlingame, a top manager at the plant, and subsequently passed the word to other activists and to journalists.

"It's a serious issue of nuclear materials accounting," said Dan Reicher, an attorney with the Natural Resources Defense Council. If such a large quantity could be unknowingly trapped in pipes, he said, "how do we know that much hasn't been stolen?"

DOE spokeswoman Catherine Kaliniak disagreed. "It is not a materials accountability problem" because the amount detected was within the classified limit for standard measurement errors, she said.

Discovery of the unexpected contamination last summer triggered a number of DOE and independent studies. A December report by the

National Research Council, for example, warned that "kilogram quantities" of plutonium had accumulated in an exhaust duct "downstream" from some key filters at Rocky Flats, raising the possibility of outdoor emissions.

The council also said contamination has been found in ducts at the Hanford, Wash., weapons complex and likely had occurred at weapons plants in South Carolina, New Mexico and Washington. "The hazards of [this] accumulation are many," the council said, "since any number of circumstances could cause a breach in the integrity of the ducts."

It explained that earthquakes, corrosion, improper maintenance, carelessness or fire could dislodge the material, possibly exposing workers to undesirable radiation.

Independent experts say that accumulation of less than a pound of plutonium in certain geometric configurations poses a risk of "criticality" if it becomes wet. Much larger amounts of dry plutonium must accumulate to reach a "critical" mass.

Duffy said he had not determined whether extensive plutonium dust had accumulated beyond the filters at Rocky Flats but said DOE did not believe that any external emissions had occurred.

Rocky Flats operations were stopped last December, ostensibly for routine maintenance and a plutonium inventory, but have not been restarted because of safety and environmental problems. "We are firmly committed to resolving all the safety problems before we start up again," said Bill Heimbach of EG&G, the private firm that manages the plant under contract from the Energy Department.

"We are now estimating 28 kilograms [nearly 62 pounds] of plutonium in the ducting, but the survey is still not complete," said Heimbach.

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