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Mr. Milton Shaw, Director
Division of Reactor Development & Technology
United States Atomic Energy Commission
Washington, 25, D.C.

January 8, 1969.

PWR-845

Subject: Proposed Extension to the ORNL Program
for Evaluation of the Effectiveness of
Iodine Impregnated Charcoal Filters
for Methyl Iodide Removal.

Dear Mr. Shaw:

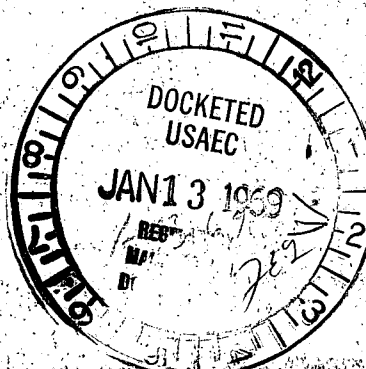
The DRL review of the construction permit application of the Consolidated Edison Company of New York, Incorporated, for Indian Point Nuclear Generating Unit No. 3, proposing the use of an iodine impregnated charcoal filter system for post accident methyl iodide removal, disclosed a need for additional technical information on the effects of moisture on filter performance.

For the most part, the technical information on impregnated charcoal filters has been developed and issued by the Oak Ridge National Laboratory. This work has been terminated, and it is our understanding that there are no plans for its continuance. We believe that the conduct of additional work, as indicated by the DRL review, is basic to the acceptance and utilization of this technology in engineered safeguards. Its continuance is, therefore, a matter of industry-wide concern and importance.

The matter of additional development work has been discussed with Mr. Craig Roberts, DRDT, and with Dr. G. Watson and Mr. R. E. Adams of ORNL. As a result of these discussions, a program aimed at obtaining the required additional technical data has been defined. A summary of this program which can be carried out most effectively at ORNL, is attached.

The importance of this work to the nuclear industry is such that Westinghouse believes that, as a factor in this industry, it should participate in its support. Westinghouse, therefore, offers to

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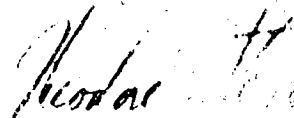
Mr. Milton Shaw

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contribute \$30,000 to the conduct of this work at ORNL. The additional information must be obtained by July 1, 1969, if it is to be applied in the design of Indian Point Nuclear Generating Unit No. 3. DRDT authorization for the work to proceed at ORNL is, therefore, required without delay.

Your assistance in implementing this program is very important and we hope to receive a favorable and speedy reply.

Very truly yours,



T. Stern, General Manager
PWR Systems Division.

Attached.

cc: J. J. Taylor
W. Lester
O. M. Hauge
Dr. P. Morris
L. Chajson
J. McAdoo
W. D. Fletcher
L. Berkowitz

Proposed Extension to the ORNL Program
for
Evaluation of the Effectiveness of Iodine Impregnated
Charcoal Filters for Methyl Iodide Removal

The general objective of this program will be to evaluate the effects of moisture on the utility of iodine impregnated charcoal filters for radioactive methyl iodide removal. In particular, the objectives will be to:

1. to show the relationship between filter performance and carbon moisture content when the moisture is derived solely from water vapor adsorption in a saturated and near saturated atmosphere.
2. to determine whether sufficient dewatering of a flooded filter can be achieved under saturated conditions to restore useful trapping efficiency for methyl iodide.

Reviews of carbon filter performance have been issued recently and supply the background for the general test methods and test results. 1,2,3,4

The base conditions for carbon testing will be similar to those described in ORNL-4180.

The test equipment will be operated at $\approx 270^{\circ}\text{F}$, 55 psia, air/steam velocity of 40 fpm, and at 90 to 100 percent relative humidity. The carbon test bed will measure 3 inches in diameter by 2 inches depth, confined between punch plate retainers as used in plant filter cell construction. The carbon bed will be oriented such that either downflow or upflow of the air/steam mixture can be maintained during a test. Except as noted, all tests will be conducted with a methyl iodide concentration of 6 mg/m^3 . The carbon to be employed for these tests will be MSA 85851.

The program, as planned, will consist of the following tests:

1. a series of six tests will be conducted to define the effects of humidity on methyl iodide decontamination efficiency over the range 90 - 100 percent relative humidity. Air/steam flow is to be downward.

2. two tests will be run at near 100 percent relative humidity, as in 1, except that air/steam flow will be upward.
3. three tests will be conducted to study the effect of flooding and recovery on methyl iodide decontamination. In these tests, the charcoal bed will be initially flooded, then purged of excess water with air at 100 percent relative humidity, then the methyl iodide efficiency determined. The air flow will be downward in these tests.
4. the flooding and recovery tests will be repeated, as in 3, except the air flow will be upward. Three tests will be run.
5. as a comparison with tests run previously at ORNL (see ORNL-4040 and -4180), two tests will be conducted with wire mesh screen retaining the carbon bed, in place of the punched metal plate.
6. also as a comparison to previous work, the air stream methyl iodide concentration will be increased from 6 mg/m^3 to 80 mg/m^3 in two tests.

The test program as outlined will require approximately 5 months to complete.

References

1. ORNL-NSIC-25, "Air Cleaning as an Engineered Safety Feature in Light-Water-Cooled Power Reactors", G. W. Keiholtz, et al, September 1968.
2. "Removal of Radiiodine from Gases", R. E. Adams and R. D. Ackley, Nuclear Safety, 9, 373 - 382, 1968.
3. Docket No. 50 - 286, Seventh Supplement to Preliminary Safety Analysis Report, Consolidated Edison Company of New York, Inc., Indian Point Nuclear Generating Unit No. 3, Section 5.
4. Docket No. 50 - 286, Ninth Supplement to Preliminary Safety Analysis Report, Consolidated Edison Company of New York, Inc., Indian Point Nuclear Generating Unit No. 3.

FROM: Westinghouse Electric Corp. Pittsburg, Penn P. Stern		DATE OF DOCUMENT: 1-10-69	DATE RECEIVED: 1-12-69	NO.: 124	
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