

ILLINOIS POWER COMPANY



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500 SOUTH 27TH STREET, DECATUR, ILLINOIS 62525

April 12, 1982



Mr. James R. Miller, Chief  
Standardization & Special Projects Branch  
Division of Licensing  
Office of Nuclear Reactor Regulations  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Miller:

Clinton Power Station Unit 1  
Docket No. 50-461

In response to the verbal requests of Mr. Jay Lee  
NRC/ETSB reviewer we are enclosing the following information  
relative to CPS-SER Outstanding Issue #10 (Section 6.4) on  
Control Room Doses:

1. CPS Control Room HVAC System Recirculation Filter  
Units; deviation from Regulatory Guide 1.52.
2. Illinois Power Company's position regarding credit  
for the Iodine removal capability of the Recirculation  
Filter Units.

Sincerely,

G. E. Wuller  
Supervisor - Licensing  
Nuclear Station Engineering

TLR:mr

Enclosure

cc: J. H. Williams, NRC Clinton Project Manager  
Jay Lee, NRC/ETSB, (w/att.)  
Ken Dempsey, NRC/AEB, (w/att.)  
H. H. Livermore, NRC Resident Inspector  
Illinois Dept. of Nuclear Safety

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CPS CONTROL ROOM DOSES  
CPS-SER OUTSTANDING ISSUE #10 (SECTION 6.4)

1. CPS Control Room HVAC System Recirculation Filter Units; deviation from Regulatory Guide 1.52.

The CPS Control Room HVAC System Recirculation Filter Units comply with all sections of Reg. Guide 1.52 with the exception of the following:

- a. The recirculation filter unit components do not include demisters, electric heaters, and upstream/downstream HEPA filters.
- b. The volumetric air flow rate for a single recirculation filter train is 57,750 cfm (one unit operation) vs. a suggested limit of 30,000 cfm.
- c. The average atmosphere residence time for the impregnated activated charcoal adsorbent is 0.125 seconds per 2 inches of adsorbent bed vs. a limit 0.25 seconds per 2 inches of adsorbent bed.

2. Illinois Power Company's position regarding credit for the Iodine removal capability of the Recirculation Filter Units.

The CPS Control Room HVAC Recirculation Filter Units consist of the following sequential components:

- a. Prefilter - removes particulate matter to prevent excessive buildup in the charcoal adsorbent bed.
- b. Upstream isolation damper.
- c. Two inch impregnated, activated charcoal adsorbent bed - removes elemental iodine and organic iodides from the air stream.
- d. Downstream isolation damper.
- e. Related instrumentation.

It is Illinois Power Company's position that some credit should be given for the iodine removal capability of the recirculation filter units. If the recirculation filter units were in strict compliance with Reg. Guide 1.52 an activated carbon decontamination efficiency of 95% could be assigned (Iodine Protection Factor, IPF = 20X). It is believed that with the CPS recirculation filter unit design, an activated carbon decontamination efficiency of 70% can be claimed (IPF = 3.33X). This is justified because of the following recirculation filter unit design features:

- a. The filter trains are designed to Seismic Category I (Reg. Guide 1.29) specifications, are Safety Related, QA/QC qualified, and will perform their function adequately under the maximum environmental conditions resulting from

the postulated DBA, to which the system will be exposed.

- b. The operation of the recirculation filter units is compatible with the operation of the make-up filter units.
- c. The recirculation filter units consist of redundant filter trains that are physically separated so that damage to one unit does not cause damage to the second unit.
- d. During normal operation of the Control Room HVAC system the recirculation filter charcoal adsorber bed is isolated (i.e. no flow through the bed). Thus the charcoal adsorbent retains its full capability to remove iodine when placed in service.
- e. The recirculation filter charcoal adsorber bed is automatically placed in service upon the occurrence of a design basis accident by a signal from redundant Seismic Category I radiation monitors (powered from Class 1E power supplies).
- f. The Control Room HVAC system is designed to provide a controlled temperature of  $73^{\circ}\text{F} \pm 2^{\circ}\text{F}$  and relative humidity of  $45\% \pm 5\%$  inside the control room. With such environmental controls it is believed that the charcoal bed will exceed its predicted efficiency of 70%.
- g. The quality of charcoal for the recirculation filter units is identical to the quality of the charcoal adsorber used in the make-up filter package units. It is therefore anticipated that the iodine removal efficiency will exceed 90%.

The above recirculation filter unit features justify a minimum iodine removal efficiency of 70% vs. 95% for a unit in total compliance with Reg. Guide 1.52. To assure the availability of the recirculation filter train during radiological emergencies, Illinois Power Company agrees to test the recirculation filter train in conjunction with the make-up charcoal filter at each refueling outage (approximately once every 18 months). This requirement would be incorporated into the CPS technical specifications, provided a 70% decontamination efficiency is allowed.

When appropriate credit is allowed for iodine removal by the recirculation filter train, this credit will be incorporated into a revised dose analysis and promptly submitted to the NRC. It is believed that the combination of this recirculation filter credit and the credit allowed for qualified dual inlet air make-up systems will result in a calculated control room dose for the Clinton Power Station which is significantly lower than the 30 Rem limit in GDC 19 and thus close that portion of CPS-SER Outstanding Issue #10 dealing with such doses.