MAGILL HALL VENTILATION SYSTEM

The Magill Hall Ventilation System consisted of separate air supply and air return components. The air supply system consisted of sealed, insulated ductwork which originated in the penthouses and proceeded to the room makeup air ducts in each area of the building. Return air, by contrast, proceeded from air intake registers in each individual area of the building to a common plenum formed above building hallways. This plenum consisted of transite panels above air return openings, plaster ceiling about 8 ft above the floor, and a concrete ceiling located about 10 ft above the floor. This common plenum was accessible through air return access doors. In turn, the return air proceeds to the penthouse area, where the air is filtered, mixed with a comparatively small amount of outside makeup air, and recirculated throughout the building.

Investigation revealed that most of the ventilation system air supply ductwork was encased in insulation which contained asbestos. In addition, transite panels located in each area were removed and disposed of as hazardous waste based on the presence of asbestos-containing materials. Transite panels exhibiting elevated radioactivity were disposed of in a manner compliant with asbestos and the elevated radioactivity present. Given the presence of asbestos-containing materials, a comprehensive radiological scoping and characterization survey was performed prior to initiation of remedial activities. Asbestos was generally remediated from areas without residual radioactivity prior to addressing areas in which both asbestos and elevated radioactivity were present. This approach segregated asbestos such that it was appropriately disposed of while minimizing disposal costs. It is also notable that ventilation system components located in radiologically elevated areas were generally removed and disposed of as radioactive waste rather than attempting to identify elevated radioactivity, confirm the absence of contamination of such materials (or decontaminate to applicable limits), and confirm the absence of residual radioactivity exceeding criteria. Given that most of the ventilation system was removed and disposed of as radioactive waste, FSSs reflect the levels of residual radioactivity present in areas not subjected to demolition activities. In addition, it is notable that FSSs of wall and ceiling surfaces have been included in survey results for individual rooms/areas. (See Table A10.1 for measurement results and Figures A10.1 through A10.3 [included in Attachment A-10-1] for sample locations.)

Overview of Surveys Performed. Quantitative alpha/beta scan surveys were performed on 100 percent of the accessible portions of the Magill Hall Ventilation System. These surveys used the Ludlum Model 43-89 detectors coupled with Ludlum Model 2360 scalers for alpha/beta scan surveys. Swipes were collected from within each ventilation opening to determine the amount of removable activity present. The swipes were counted with a Ludlum Model 43-10-1 alpha/beta sample counter. Quantitative alpha/beta static measurements were performed at locations where decontamination was performed using the Ludlum Model 43-89 ZnS detector coupled with a Ludlum Model 2360 scaler. All results were below the DCGL of 1,160 dpm/100 cm^2 for alpha (Am-241) emitting radionuclides. Residual beta activity was compliant with both the Cs-137 surface contamination level of 5,000 dpm/100 cm^2 specified in AEC Regulatory Guide 1.86 (AEC 1974) and the NRC screening level DCGL of 28,000 dpm/100 cm^2 cited in Table 5.19 of NUREG-5512 (NRC 1999) for Cs-137 on structures.

Table A10.1. Second Floor Ventilation Measurement Results

Sample Number	Survey Surface	Total Alpha Activity (dpm/100 cm^2)	Total Beta Activity (dpm/100 cm^2)
1	Edge of Intake	11	250
2	Air Intake Louver, right side	43	273
3	Air Intake Louver	18	132
4	Air Intake Louver	5	481
5	Air Intake Louver	-1	339
6	Pipe	43	326
7	Concrete Wall	18	681
8	Metal Duct	5	379
9	Metal Air Intake Louver	18	296
10	Metal Air Intake Louver	18	362

The MDC is the minimum detectable concentration on a surface that an instrument is expected to detect (e.g., activity expected to be detected with 95 percent confidence).

Negative results indicate results that are below background for the respective building material.

N/A – Not Applicable

Summary. Residual levels of radioactivity in the Magill Hall Ventilation System clearly demonstrate that residual concentrations of radionuclide COPCs achieve the most restrictive screening level DCGLs of 1,160 dpm/100 cm^2 (alpha) and 5,000 dpm/100 cm^2 (beta).

Given these results, it is clearly demonstrated that the null hypothesis (i.e., that the Magill Hall Ventilation System exceeds DCGLs) is rejected. Review of survey data supports the conclusion that the Magill Hall Ventilation System contains an adequate number of samples; a sufficient percentage has been scanned; and it has been appropriately classified consistent with MARSSIM requirements using the process noted in Section 4.0 of the main text of this document. All scan and fixed measurement results collected from the Magill Hall Ventilation System were below the $DCGL_W$. As such, formal assessment using the Sign Test is not required.

Conclusion. Levels of radioactivity in the Magill Hall Ventilation achieve screening level DCGLs for unrestricted release consistent with the provisions of 10 *CFR* 20, Subpart E.

ATTACHMENT A-10-1

FIGURES

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