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The Washington State University Nuclear Radiation Center (NRC) is heated by a Weil-McLain Model 80 Series 1 boiler. The heating system consists of the boiler, room heat exchangers and associated hot water distribution network, and a settlement tank/reservoir. Make-up water is added to the boiler reservoir from the municipal fresh water supply. A float activated switch regulates the volume of water in the reservoir by electrically operating a solenoid that opens and closes a valve which controls delivery of fresh water to the reservoir.

The float activated switch failed, sending a signal that the level of water in the boiler reservoir was too low, when the boiler reservoir was actually already full. Thus, the solenoid controlled valve remained in the open position, continuously adding water to the boiler reservoir. The excess water flowed out through holes in the steel lid of the reservoir, spilling onto the boiler room floor. The water flowed into a floor drain, passed through the building drain system, and entered into the liquid waste system lower holding tank. The tank is of concrete fabrication, and lies below grade approximately 30 feet to the west of the exterior west wall of the NRC. The tank has a capacity of approximately 3000 gallons. It is a two chamber tank with a center dividing wall. The antechamber is on the north side of the tank, and the secondary chamber is on the south. Each chamber may be entered or monitored via at-grade access holes, which are covered with steel lids. The antechamber receives building effluent, and acts as a settlement tank by allowing the effluent a quiescent residence time before transfer to the secondary chamber. When the secondary chamber becomes filled, water is transferred from the secondary chamber by means of a pumping system to a steel holding tank, where water is held for testing, pending disposal.

The exterior concrete holding tank eventually was filled by the runoff of freshwater from the boiler reservoir refilling system. The fresh water runoff was continuously supplied to the holding tank, causing water to exit the tank through the north access hole, which lies over the antechamber. The fresh water runoff flowed across the top of the concrete tank, and into the street. The flow of water was of a rate such that a near steady-state condition was established in which the puddle in the road evaporated at a rate slightly less than the rate at which additional fresh water spilled forth from the holding tank.

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A Nuclear Radiation Center employee, Keith Fox, checked the security cameras at about 10:15 a.m. Sunday morning, July 9, 2006, and found that water was flowing onto the road in front of the NRC. Fox notified David King, who responded to the scene at 10:30 a.m. King started the pumping system to transfer water from the concrete holding tank into a separate steel storage tank. A WSU police officer restricted entry into the area by cordoning off the locale of the spill by placing orange traffic cones and tape. The transfer of water from the concrete holding tank immediately caused the overflow of water to cease. The stuck float switch in the boiler room was identified about 1:00 p.m., and the position of the switch was corrected, which resulted in a cessation of flow of water from the boiler reservoir.

Representatives of the WSU Radiation Safety Office were notified. Amanda Fox and Kreta Johnson responded to the scene. The RSO representatives surveyed the entire affected area with handheld survey instruments, and took 118 swipe samples of the area.

One milliliter water samples were taken from the antechamber and secondary chamber of the concrete storage tank, and from two places on the surface of the driveway, where the water had collected. The water samples were examined by means of liquid scintillation counting.

A 500 mL sample was taken from the storage tank and counted for eight hours with a HPGe detector.

Every sample (the 118 swipes, water samples, and 500 mL sample) that was examined indicated that there was no release of radioactive material from the tank.

The representatives of the Radiation Safety Office indicated at approximately 7:00 p.m. that they considered the area to be free from contamination and safe to enter. The barriers were retained and controlled access to the area was maintained until the final results of the HPGe measurements were available, at approximately 7:00 a.m. on the morning of July 10, 2006. The results of HPGe measurements confirmed that there was no release of radioactive material. Restricted access to the area of the water release ceased at that time. The area has been returned to its normal and customary use.

If there are any further questions, I may be reached at (509) 335-8641 or via e-mail at donald_wall@wsu.edu.

Respectfully Submitted,



Donald Wall
Director

cc: Marvin Mendonca, Project Director, USNRC