

Washington River Protection Solutions (WRPS) operates the 242-A Evaporator in the 200 East Area of the Hanford Site. The evaporator is critical to the safe management of Hanford's tank waste. It began operating in 1977 to reduce the volume of waste stored in Hanford's underground tanks. By removing water from the waste, WRPS is able to make additional storage space available for continued retrieval of waste from Hanford's aging 149 single-shell tanks.

Prior to processing waste through the evaporator, the waste is extensively analyzed to determine its key constituents. This information is used to determine how the waste will behave both during and after the evaporation process and to determine how much water can be safely removed from the waste.

If acceptable for processing, the waste is pumped into the evaporator from nearby double-shell tanks via double-walled underground transfer lines. It goes into a sealed vessel where atmospheric pressure is reduced and steam heat is applied, boiling the waste at only 125 degrees F., much lower than it would under normal pressure. When the waste reaches a designated thickness, called specific gravity, the waste is transferred to a double-shell tank for storage.

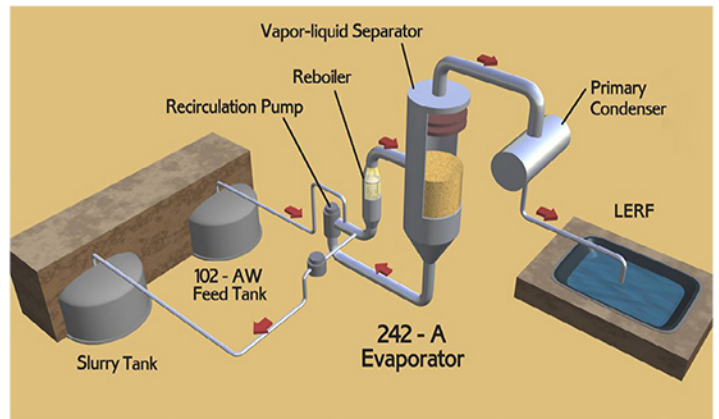
The evaporated water is captured, condensed, filtered, sampled and sent to the nearby Liquid Effluent Retention Facility, which further treats the liquid before disposal. The evaporator is able to achieve a significant reduction in waste volume, which increases available tank storage space. This reduction in volume helps avoid the high cost of building and eventually disposing of new storage tanks.

The 242-A Evaporator operates under strict environmental regulations, stringent operational controls, and requires extensive maintenance and operator training to maintain the facility in a fully operable condition.

In 1987 engineering and design studies were initiated to extend the operating life of the evaporator. In 1989 a series of additional changes were made to address environmental protection issues. Following facility modifications and upgrades the 242-A Evaporator was restarted in 1994. Additional modifications and upgrades have been completed to extend the operating life of the facility. Recent upgrades include replacement of the ventilation system and upgrade of the monitoring and control system.



242-A Evaporator and surrounding area



Evaporator process diagram



242-A control room

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