

**Assessment of Operational Readiness of the Safety Class
244-AR TK-002 Ventilation System**

Site: Office of River Protection, Hanford

Facility: Tank Farms

System: 244-AR TK-002 Ventilation System

System Classification: Safety Class

System Safety Function: Confinement Ventilation and Prevention of Flammable Gas Accumulation caused by steady-state gas releases from waste in the tank.

OBJECTIVE:

VSS-1 This vital safety system is operational and personnel and processes are in place that ensures its continued operational readiness.

VSS-1.1 VSS safety functions are defined and understood by responsible line managers, and supporting information/documentation is available and adequate. System testing is adequate to ensure operability. (Review Approach items 1, 2, 3 and 7)

Discussion of Results –

The safety function of the 244-AR TK-002 ventilation system is to prevent the accumulation of flammable gas due to steady-state releases, thus decreasing the frequency of the flammable gas deflagration accident (Section 3.4.2.2) (Final Safety Analysis Report (FSAR) Chapter 4). There is no functioning filtered passive or active ventilation system for 244-AR. Therefore, there is no confinement ventilation system associated with the 244-AR facility.

The ventilation (air purge) system is credited with preventing the accumulation of flammable gases due to steady-state releases during normal operations. The flammable gas deflagration accident is discussed in section 3.4.2.2 of the FSAR.

Functional requirements – The 244-AR TK-002 dip tubes shall provide minimum total inlet airflow of 3 ft³/h to the tank while waste remains in the tank. The dip tube flow indicators shall have a minimum range of 0 ft³/h to 2.5 ft³/h.

Performance criteria – The dip tube flow indicators for 244-AR TK-002 shall be functionally tested annually and shall be monitored twice a day to verify operability. Testing is implemented programmatically through the Technical Safety Requirement (TSR) Administrative Controls.

The 244-AR TK-002 dip tubes are providing minimum total inlet airflow of 3 ft³/h to the tank while waste is stored. The acceptance criteria of “verify that a minimum of 3 ft³/h of air is being supplied to TK-002 “ meet the function(s), conditions, requirements, and performance criteria.

**Assessment of Operational Readiness of the Safety Class
244-AR TK-002 Ventilation System**

The surveillance (operator round) frequency for the 244-AR TK-002 dip tube Rotameters is twice per shift. Hence, the operability of the dip tubes is checked four times each day. A functional check is performed annually.

Drawings are maintained in the CH2M Hill Hanford Group Inc. Document Control Program. Drawings consist primarily of the contractor print files and are validated by walk down of the systems.

- VSS-1.2** The backlog for surveillances, tests, inspections, maintenance, repair, upgrades, or other work on the system is managed and kept to an appropriate minimum. (Review Approach item 6)

Discussion of Results –

There is presently no preventive or corrective backlog of maintenance for this facility. The facility is being worked under the 244-AR Vault Interim Stabilization Project Plan. The scope of the project is to remove all pumpable liquids from the vault tanks and sumps, isolate the facility from possible leak intrusion, and establish liquid-level monitoring to detect future intrusions.

- VSS-1.3** Configuration Management and Maintenance programs effectively ensure operational availability of the system. (Review Approach items 5, 8 and 9)

Discussion of Results –

Presently the Rotameters are functionally checked on an annual basis in accordance with the applicable maintenance guidance.

The facility has regularly scheduled walk downs and the last one was accomplished on 11/7/00. Four times each day the Rotameters are verified that they are operational.

The maintenance program is well established and procedures are in place. The operator routines, which review the systems performance, are performed daily. The Shift Operations Manager is responsible for the maintaining the system in operational status.

Configuration management of fieldwork and/or modifications is accomplished in accordance with procedures.

- VSS-1.4** The system is operable and available to fulfill its safety function when required. (Review Approach items 4 and 10)

Discussion of Results –

The system failed to meet its functional requirement three times. These were reported in Occurrence Reports.

**Assessment of Operational Readiness of the Safety Class
244-AR TK-002 Ventilation System**

The failures didn't have any impact to the operational responses of the system.

The percentage of time the system was capable of accomplishing its safety function(s) when required to be operable during the time period of 1998 to 2000 was 99.7 %.

A review of the support systems for 244-AR Vault facility showed that the compressed air and electrical power support systems are in place and operational.

CONCLUSIONS:

This review has established that the system is operational and personnel and processes are in place that ensures its continued operational readiness. Although the purge air system has had 3 failures during the period under review, these failures can be categorized as two equipment failures and an administrative failure that reduced the systems availability to 99.7%. The equipment failures were due to a loss of purge air for four hours and a fluctuation combined with a narrow range of flow adjustment (which has been corrected by equipment replacement). The administrative failure was caused by not documenting the operable status of the system for 12 hours. Upon further review, it was determined that the purge air system was checked and found to be operable. If this new information was used, the possible 12-hour loss of purge air would not exist and the overall availability of the safety function would be greater than 99.8%.

Because the facilities exhaust system is non-operational and not required, there is no confinement ventilation system associated with the 244-AR facility.

In addition, boundary drawings are needed to help clarify the safety systems within the facility and the interfaces to supporting structures, systems and components.

The safety systems will need to have the role of each unique piece of equipment defined. These requirements need to be defined in an update to the RPP Safety Equipment List.

DOE employee who reviewed this assessment DOE Review Team Date 2/28/01
(*See below)

Hours required for completing the assessment.

DOE: 40 Hrs.

Contractor: 164 Hrs.

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