

Criteria, Review, and Approach Document for the Assessment of Operational Readiness of Vital Safety Systems (VSS)

Reviewed by: _____ Date: _____

Site: LLNL

Facility: Plutonium Facility - Building 332

System: Gloveboxes

System Classification: Safety Significant

System Safety Function: The safety function of the gloveboxes in conjunction with differential atmospheric pressure is to protect workers by providing primary confinement of hazardous and radioactive materials. This confinement serves three functions: (1) the plutonium and hazardous materials are contained inside a physical barrier to prevent the spread of potentially radioactive contaminated gases; (2) the plutonium and flammable chemicals and hazardous materials can be protected from oxidation (fire) by an inert atmosphere; and (3) to protect workers by providing primary confinement of hazardous and radioactive materials. (See Section 4.4.1.1 of Building 332 SAR)

OBJECTIVE

VSS-1

This vital safety system is operational and personnel and processes are in place that ensure its continued operational readiness.

Criteria and Discussion of Results

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. (See Review Approach items 1, 2, 3 and 7.)

Discussion of Results – (List information/documentation that was unavailable or inadequate. Indicate whether the criterion was met.)

Answer VSS 1.1

The VSS safety functions are defined in Chapter 4 of Building 332 SAR.

Answer VSS 1.1 (cont)

Line Managers are responsible for understanding the VSS safety functions. System responsible individuals are trained and tested to ensure their understanding of the safety functions.

Building 332 Facility Safety Plans, Facility Operating Procedures, and system drawings are available to provide supporting information and documentation on this VSS.

Building 332 ACPs ensure operability of this vital safety system. In addition, daily inspections are used to ensure the operability of the VSS each working day the glovebox is entered.

The criteria within question VSS 1.1 were met.

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. (See Review Approach item 6).

Discussion of Results – (Provide a discussion indicating whether the criterion was met.)

Answer VSS 1.2

There is no backlog of preventive maintenance, corrective maintenance, modifications, surveillances, tests, inspections or corrective actions for gloveboxes.

The criteria within question VSS 1.2 were met for glovebox surveillances, tests, inspections, maintenance, repair, and the upgrade projects. All elements are managed and work delay is kept to an appropriate minimum.

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

Discussion of Results – (Address the maintenance program, document control, identification of system requirements and their bases, change control/work control, and assessments of the system. Indicate whether responsibility for operational readiness of this system is formally assigned.)

Answer VSS 1.3

Building 332 has a work control/design control process that assures work activities are properly requested, reviewed, and authorized before being performed

Answer VSS 1.3 (cont)

and such work activities are performed in a formal and deliberate manner with emphasis on safety. In addition, ACP-B332-011, *Unreviewed Safety Questions (USQ) Procedure* provides guidance for evaluating proposed activities for potential Unreviewed Safety Questions.

All procedures within the Plutonium Facility are prepared using QOP-B332-001, *Preparation of Controlled Procedures*, and are reviewed, approved, and revised using QOP-B332-002, *Review, Approval and Revision of Unclassified Controlled Documents – Document Change Control Process*. All controlled procedures within the Building 332 are reviewed every three years.

For the past two years, the Work Control Process has been used to control changes to systems in Building 332. This process, which applies to all facility and program modifications, requires engineering design reviews, requires that "as-built" conditions are confirmed prior to beginning work, ensures the design basis is maintained and also is the mechanism for triggering drawing updates. Prior to 1998, less vigorous configuration management existed in Building 332. The facility is gathering drawings and documentation for an archiving initiative.

There is not a formal maintenance program for the gloveboxes. However, prior to entering each glovebox, the vacuum is verified within the box. Also, weekly continuous air monitoring checks are performed by maintaining box negativity and by verifying that the contamination has not escaped the box. It can be assumed that the box is fulfilling its safety function.

The criteria within question VSS 1.3 were met for configuration management and maintenance programs.

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

Discussion of Results – (Provide a discussion indicating whether the criterion was met.)

Answer VSS 1.4

During the past three years, aside from one exception, gloveboxes in Building 332 have been capable of accomplishing their safety function 100% of the time. The one exception was a deactivated glovebox that had seen extensive acid use. Several locations were identified where failures of the Kynar coating lead to through-wall corrosion (particularly at the welded areas). The glovebox had been deactivated in preparation for D&D and the glovebox exhaust system prevented the spread of contamination by maintaining box negativity.

Answer VSS 1.4 (cont)

During the past three years, no glovebox in Building 332 has failed to meet its test acceptance criteria or failed to respond to facility operating conditions.

The criteria within question VSS 1.4 were met for system operability.