

ANS Issues Clarification on ANSI/ANS-58.9-1981, *Single Failure Criteria for Light Water Reactor Safety-Related Fluid Systems* (reapproved as ANSI/ANS-58.9-2002 (R2009)).

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Inquiry:

Our project is committed to comply with the single failure criteria of standards IEEE-379-1994 and ANSI/ANS-58.9-1981. An audit was recently performed on some of our plant (Waste Treatment and Immobilization Plant - a Hazard Category 2 nuclear facility) systems and equipment. Our design includes an emergency air supply system to purge the headspaces of process vessels of hydrogen and other flammable gases evolved from the waste in the vessels. The system is classified as Safety Class, Seismic Category I, and Q (NQA-1 compliant) and is on emergency power and required to meet the single failure criteria. The system has multiple air compressors, each with a dedicated accumulator. The accumulator discharge lines merge into a single common supply line to the served loads in a building housing several waste vessels. The common line contains a butterfly isolation valve to support the performance of system maintenance. During normal and off-normal operations, this valve is locked open. During initial system set-up or following maintenance evolutions during which the valve is closed, the valve is returned to the locked-open position and confirmed to be in this configuration via independent verification. When plant conditions call for this system to provide air to the served vessels, no operator actions are required relative to the positioning of this butterfly valve. In addition, the valve will be covered by the facility Technical Safety Requirements (e.g., Tech Specs) and will be periodically confirmed to be open via TSR required surveillances.

The auditors read ANSI/ANS-58.9-1981 to require the project to consider this valve as a "potential single active failure." Based on their reading of ANSI/ANS-58.9-1981 and ANSI/ANS-58.8 definitions for "operator error" and "safety-related operator action," our Contractor disagrees with the audit conclusions. Further, they base their position on the requirements of IEEE Standard 379, Section 5.5, which exempt maintenance errors and operator errors from consideration as common-cause failures subject to single-failure analysis.

Response:

ANSI/ANS-58.9-1981 is a design standard and does not address the administrative controls that a facility may impose on the operation of a system or component.

The manual valve in question does not have to be considered as a potential single active failure due to operator error if the valve is capable of being physically locked in position and the plant design documents (e.g. P&ID) specify the valve is to be locked open.