

accident events. Because the hydrogen monitors no longer meet the definition of Category 1 in RG 1.97, the NRC believes that licensees' current commitments are unnecessarily burdensome. The NRC believes that Category 3, as defined in RG 1.97, is an appropriate categorization for the hydrogen monitors because the monitors are required to diagnose the course of significant beyond design-basis accidents. Category 3 applies to high-quality, off-the-shelf backup and diagnostic instrumentation. As with the revision to oxygen monitoring, this relaxation may also require a license amendment at some facilities. Licensees will also need to update their final safety analysis report to reflect the new classification and RG 1.97 categorization of the monitors in accordance with 10 CFR 50.71(e).

E. Technical Specifications for Hydrogen and Oxygen Monitors

As discussed in III.C and III.D above, the amended rule requires equipment for monitoring hydrogen in all containments and for monitoring oxygen in containments that use an inerted atmosphere. The rule also requires that this equipment must be functional, reliable, and capable of continuously measuring the concentration of oxygen and/or hydrogen in containment atmosphere following a beyond design-basis accident for combustible gas control and severe accident management, including emergency planning. Because of the importance of these monitors for the management of severe accidents, the NRC staff evaluated whether operability and surveillance requirements for these monitors should be included in the technical specifications.

In order to be retained in the technical specifications, the monitors must meet one of the four criteria set forth by 10 CFR 50.36. These criteria are as follows:

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
3. A structure, system, or component that is part of the primary success path and that functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

4. A structure, system or component that operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

As stated in the **Federal Register** notice (60 FR 36953) for the final rule for technical specifications, these criteria were established to address a "trend toward including in technical specifications not only those requirements derived from the analyses and evaluations included in the safety analysis report but also essentially all other Commission requirements governing the operation of nuclear power plants. This extensive use of technical specifications is due in part to a lack of well-defined criteria (in either the body of the rule or in some other regulatory document) for what should be included in technical specifications." As such, the NRC has decided, and established by rule, not to duplicate regulatory requirements in the technical specifications.

Hydrogen and oxygen monitors do not meet criteria 1, 2, or 3 of 10 CFR 50.36 described above. In addition, the Feasibility Study performed by the NRC, and documented in section 4 of Attachment 2 of SECY-00-0198, concluded that the requirement to provide a system to measure the hydrogen concentration in containment does not contribute to the risk estimates for core melt accidents for large dry containments; is not risk significant during the early stages of core melt accidents for Mark I and Mark II containments; and is not risk significant in terms of dealing with the combustion threat of a core melt accident (except for those conditions when the igniters are not operable, *e.g.*, Station Blackout) for Mark III and ice condenser containments. These conclusions were based on the assumptions that Mark I and Mark II containments are inert and hydrogen igniters are operable for Mark III and ice condenser containments. It should be noted that the existing technical specification requirements for hydrogen igniters and for maintaining primary containment oxygen concentration below 4 percent by volume (*i.e.*, inerted), are not being removed; therefore, the conclusions in the Feasibility Study on the risk significance of the hydrogen monitors remain valid. On this basis, the NRC has concluded that hydrogen monitors do not meet criterion 4 of 10 CFR 50.36.

Oxygen monitoring is not the primary means of indicating a significant abnormal degradation of the reactor coolant pressure boundary. Oxygen monitors are used to determine the primary containment oxygen

concentration in boiling water reactors. As stated above, the limit for primary containment oxygen concentration for Mark I and II containments will remain in technical specifications; therefore, a technical specification requirement for oxygen monitors would be redundant. In addition, technical specifications for hydrogen igniters for Mark III containments will remain. The oxygen monitors have been shown by probabilistic risk assessment to not be risk-significant. On this basis, the NRC has concluded that oxygen monitors do not meet criterion 4 of 10 CFR 50.36.

The NRC has several precedents regarding not duplicating regulatory requirements for severe accidents in the technical specifications. The Anticipated Transients Without Scram (ATWS) rule, (10 CFR 50.62) requires each pressurized water reactor to have equipment from sensor output to final actuation device, diverse from the reactor trip system, to automatically initiate the auxiliary (or emergency) feedwater system and initiate a turbine trip under conditions indicative of an ATWS. This equipment is required to be designed to perform its function in a reliable manner and has no associated requirements incorporated in the technical specifications. The Station Blackout (SBO) rule, (10 CFR 50.63) requires that each light water reactor must be able to withstand and/or recover from a station blackout event. Section 50.63 also states that an alternate ac power source will constitute acceptable capability to withstand station blackout provided an analysis is performed that demonstrates that the plant has this capability from onset of the station blackout until the alternate ac source and required shutdown equipment are started and lined up to operate. Again, no requirements for the alternate ac source are required to be in technical specifications.

NRC experience with implementation of the above regulations for non safety-related equipment has shown that reliability commensurate with severe accident assumptions is assured without including such equipment in technical specifications. According to the "Final Report—Regulatory Effectiveness of the Station Blackout Rule" (ADAMS ACCESSION NUMBER: ML003741781), the reliability of the alternate ac power source has improved after implementation of the SBO rule. It states:

"Before the SBO rule was issued, only 11 of 78 plants surveyed had a formal EDG reliability program, 11 of 78 plants had a unit average EDG reliability less than 0.95, and 2 of 78 had a unit average EDG reliability of less than 0.90. Since