

reducing the potential for public exposure.

An industry organization requested a revision in a statement in section III.F in the statement of considerations (SOC) concerning the purposes of the high point vents from: “* * * venting noncondensable gases from the vessel allows emergency core cooling flow to reach the damaged core and thus prevents further accident progression” to “* * * the purpose of the high point venting is to ensure that natural circulation cooling is an option for maintaining a long term safe stable state following a core damage accident in which significant amounts of noncondensable gases, such as hydrogen might be generated and retained in the reactor coolant system.” The NRC disagrees with the comment and believes the current wording is adequate. Other information in section III.F adequately defines the purpose of high point vents by acknowledging their usefulness both for forced circulation scenarios and in the natural circulation mode.

J. Design Basis Accident Hydrogen Source Term

A private citizen questioned that because an unexpected hydrogen bubble and an unexpected hydrogen burn occurred during the accident at Three Mile Island, should hydrogen buildup be considered a known risk for which licensees should try to monitor and control as thoroughly as possible? The NRC agrees with the commenter that hydrogen generation during severe accidents is an expected phenomenon. After the TMI accident, the NRC has sponsored an extensive research program on the behavior of severe accidents. This program was designed improve the understanding of core melt phenomena; combustible gas generation, transport, and combustion; and to develop improved models to predict the progression of severe accidents. The results of this research have been incorporated into various studies (e.g., NUREG-1150 and probabilistic risk assessments performed as part of the Individual Plant Examination (IPE) program) to quantify the risk posed by severe accidents for water-cooled reactors.

The result of these studies has been an improved understanding of combustible gas behavior during severe accidents and confirmation that the combustible gas release postulated from a design-basis LOCA was not risk-significant because it would not lead to early containment failure, and that the risk associated with gas combustion was

from beyond-design-basis (e.g., severe) accidents. Thus, the requirements for control and monitoring of combustible gases are being reduced for the non-risk-significant design-basis accident scenarios. The amended regulations are entirely consistent with and justified by the findings of the post-TMI studies.

K. Requested Minor Modifications

An industry group requested that the last paragraph of Section B of the draft regulatory guide be changed to read: “The treatment requirements for the safety-significant components in the combustible gas control systems, the atmospheric mixing systems and the provisions for measuring and sampling are delineated in Section C, Regulatory Position.” The NRC disagrees with the requested change. Section 50.44 is being revised to eliminate unnecessary requirements relating to combustible gas control in containment. The remaining requirements have been determined by the NRC to be necessary to mitigate the risk associated with combustible gas generation. The regulatory guide provides recommended treatments for all structures, systems, and components credited for meeting those requirements. Because the regulatory guide is only guidance, licensees are free to devise their own treatments for these structures, systems, and components, subject to NRC review and inspection.

L. Atmosphere Mixing

A private citizen suggested adding criteria to the regulatory guide to assess the adequacy of the performance of atmosphere mixing systems. The NRC disagrees with the commenter that these criteria are needed. The NRC has already evaluated the adequacy of atmosphere mixing at currently operating pressurized and boiling water reactors. However, for future water-cooled reactor designs, the NRC has decided to specify that containments must have the capability for ensuring a mixed atmosphere during “design-basis and significant beyond design-basis accidents”. Other guidance on determining the adequacy of atmosphere mixing systems is also provided in the rule and the regulatory guide.

An industry group requested that the SOC and regulatory guide be revised to only impose requirements on safety-significant hydrogen (atmospheric) mixing systems. They contend that some large dry containments have hydrogen mixing systems in addition to containment fan cooler units. The fan cooler units are supposedly the prime mode of ensuring a mixed atmosphere; therefore, the hydrogen mixing systems

are classified as low safety-significance. The industry group believes that regulatory requirements should not be imposed on low safety-significant equipment. The NRC disagrees with the requested change. Section 50.44 is being revised to eliminate unnecessary requirements relating to combustible gas control in containment. The remaining requirements have been determined by the NRC to be necessary to mitigate the risk associated with combustible gas generation. The regulatory guide provides recommended treatments for all structures, systems, and components credited for meeting those requirements. Because the regulatory guide only provides guidance, licensees are free to devise their own treatments for these structures, systems, and components, subject to NRC review and inspection.

M. Current Versus Future Reactor Facilities

An industry group requested that § 50.44(c) be amended to clarify that its requirements relate only to light-water reactors. The NRC acknowledges that the proposed requirements in § 50.44(c) were largely patterned after light-water reactor requirements and might not be specifically applicable to all types of future light-water and non light-water reactor designs. Therefore, the NRC has modified § 50.44(c) to apply only to future water-cooled reactors with characteristics such that the potential for production of combustible gases during design-basis and significant beyond design-basis accidents is comparable to current light-water reactor designs. In addition, the NRC has added a new paragraph (d) that specifies combustible gas control information to be provided by applicants for future reactor designs when the potential for the production of combustible gases is not comparable to current light-water reactor designs. The purpose of this information is to determine if combustible gas generation is technically relevant to the proposed design; and, if so, to demonstrate that safety impacts of combustible gases generated during design-basis and significant beyond design-basis accidents have been addressed in the design of the facility to ensure adequate protection of public health and safety and common defense and security.

The industry group also commented that the regulatory guide is unclear on what parts are applicable to existing reactors and what parts are applicable to future reactors. The Introduction and section B do not agree. The NRC agrees. The regulatory guide has been modified to clarify the applicability of the revised § 50.44 to present and future water-