NMSS-0021. Unlikely Events

DESCRIPTION

Inspections at the gaseous diffusion plants identified that they were not properly applying ANSI/ANS-8.1-1983, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors," with regard to unlikely events. Many licensees adopt the standards in ANSI/ANS-8.1-1983 as part of their nuclear criticality safety programs. These standards state that criticality safety is achieved by controlling certain parameters within sub- critical limits. The safety concern with the use of unlikely events at the gaseous diffusion plants (GDPs) is that "unlikely events" are being used as one leg of double contingency without establishing specific controls that make the occurrence of the event unlikely. With the exception of external phenomena (earthquakes, floods, and so forth), there are few events that are inherently unlikely without depending on the nature of the operation and specific engineered and administrative features that make the event unlikely. Without specific features

of the system being identified and controlled as important to safety, these items cannot be placed under the configuration control program, as required to maintain the plant's safety basis, and the availability and reliability

of these features cannot be ensured. This issue[1] concerned a bank of evaporators at Portsmouth, the failure of which had been considered an unlikely event even though there was a demonstrated history of failure.

The existing regulations and/or license conditions require fuel cycle facilities to have nuclear criticality safety programs. The NRC reviews, approves, and inspects these programs as part of the regulatory process. The failure of the GDPs to correctly apply the ANSI standard was captured by the existing regulatory processes and was an issue that was expected to be resolved through enforcement. Furthermore, while nuclear criticality

safety is applicable to all fuel cycle facilities, the incorrect interpretation of ANSI/ANS-8.1-1983 by the GDPs was deemed to be an isolated case. In order to verify that the NRC was properly interpreting the standard, ANSI was consulted by the licensee which in turn supported NRC's interpretation that an unlikely event was not to be used as a contingency.

CONCLUSION

While the issue was of low safety significance and did not appear to be generic, follow-up action was pursued. In January 2001, a letter to the GDPs was being prepared to clarify the proper use of unlikely events as outlined by ANSI/ANS-8.1-1983. The development of guidance generic to the fuel cycle industry, based on the letter to the GDPs, was also to be considered.

Finally, the requirements in Subpart H of the new 10 CFR Part 70 (particularly those relating to the identification of Items Relied on for Safety (IROFS), and performance of an Integrated Safety Analysis, or ISA) will also serve to significantly increase the likelihood that licensees have an adequately documented criticality safety program. These new requirements will require a more systematic analysis of systems and processes relied on for criticality

safety and control. Thus, the issue was dropped from further pursuit.[2]

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[1] Memorandum for W. Travers from W. Kane, "Closure of Two NMSS Generic Issues," January 26, 2001. [ML010240165]

[2] Memorandum for W. Travers from W. Kane, "Closure of Two NMSS Generic Issues," January 26, 2001. [ML010240165]