



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

CLASS C STORAGE ENVIRONMENT FOR SORBENT CANISTERS

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-348 AND 50-364

INTRODUCTION

By submittal dated February 19, 1990, as supplemented June 11 and December 5, 1990, Alabama Power Company (the licensee) requested an amendment to the exemption granted October 23, 1984, to allow Mine Safety Appliances (MSA) GMR-1 canisters to be stored in a Class C storage environment versus a Class A storage environment as defined in ANSI N45.2.2. Additionally, in response to concerns identified by the Nuclear Regulatory Commission (NRC) staff, the licensee has included in the amendment request a commitment to a revised respirator fit factor for use of the MSA GMR-1 canisters.

EVALUATION

The licensee's submittal provided a letter from the Mine Safety Appliances Company (MSA) which contains a summary of test results which form the basis for MSA and the licensee's conclusion that Class C storage is acceptable. The test summary discussed accelerated storage tests, Class B storage tests, and a moisture permeation study of the bottom seal.

The accelerated storage tests consisted of 24 canisters after 4 months' storage being exposed to a 10 ppm methyl iodide concentration for 480 minutes, three canisters after 6 months' storage being exposed to a 5 ppm methyl iodide concentration for 480 minutes, and one canister after 1 year's storage being exposed to an 8 ppm methyl iodide concentration for 480 minutes. In all cases, methyl iodide penetration was below 0.5%. In addition, the three canisters tested after 6 months' storage had their testing continued to a 1% break-through of methyl iodide. The average time to a 1% breakthrough was 44 hours.

The Class B storage tests consisted of samples drawn at 3- and 4-year storage intervals and tested. Test penetrations were at or below initial inspection results for the canister lot.

The moisture permeation study on the canister bottom seal was conducted at 100°F and 100% relative humidity. MSA found the moisture incursion to be insignificant.

The NRC staff has reviewed the information submitted by the licensee and concludes that Class C storage is acceptable.

The exemption granted on October 23, 1984, included a limitation that the canisters be used with a full facepiece capable of providing a protection factor greater than 100. Protection factors are a measure of protection from the work place atmosphere that can be assumed when using a particular respirator. Protection factors are established in Appendix A to 10 CFR Part 20 for various classes of respirators. Appendix A to 10 CFR Part 20 specifies a maximum protection factor of 50 for a full facepiece negative pressure respirator in which the MSA GMR-I canisters are to be used. Therefore, Appendix A to 10 CFR Part 20 does not allow credit for a protection factor of 100 for a full facepiece respirator as was specified in the original exemption.

In response to discussions with the NRC staff, the licensee resolved this issue by revising the amendment request to commit to use the MSA GMR-I canisters with a full facepiece respirator capable of providing a fit factor equal to or greater than 500. A minimum fit factor of 500 is consistent with current good industry practice and has been found acceptable in the past by the NRC staff. Therefore, the revised fit factor is acceptable for the use of the MSA GMR-I canisters at Joseph M. Farley Nuclear Plant, Units 1 and 2.

Principal Contributor: Stephen T. Hoffman

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